American Aviation



New Honeywell E-10 Autopilot helps fly the F-100 Super Sabre

THE extremely high performance characteristics of North American's new F-100 Super Sabre-plus the precise missions it will be required to fly-demand an entirely new high performance flight

Honeywell is proud that its new E-10 control system. Autopilot was selected to help fly the autopilot equipped Super Sabres.

Here are some features of the E-10 which make it an outstanding flight con-

Mission matching adaptability to a wide trol system: variety of command signals-fire control, blind landing, cruise control, radio navi-

Extremely rapid response of hydraulic gation.

Fully coordinated three axes stabiliza-

Constant mach control in dive, climb or

Complete air speed compensation providing uniform response at all air speeds.

Control stick steering.

All-attitude maneuverability. Components that make up the E-10 can be combined into highly effective control systems for dive bombing, interception, level bombing or normal cruise control for any high performance aircraft.

The new E-10 Jet Autopilot is another new development from Honeywell. There'll be more, for automatic control is so important to aviation's progress. And automatic control is Honeywell's business.

oneywell



H Geronautical Controls

2600 Ridgway Road, Minneapolis 13, Minnesota



High-strength aluminum-alloy nuts meet AN steel nut tensile loads. Nylon locking inserts guarantee reusability through 50 on-off cycles.

Approved for use on Air Force, Army and Navy aircraft, the new ESNA Blue "J's" are lighter than any other self-locking nuts of equivalent strength.

Intended for use with AN steel bolts and lubricated to minimize thread wear, the new ESNA Blue "J's" provide a smoothly uniform torque-tension relationship and forestall thread galling. They accomplish maximum fastener weight savings without sacrificing strength. Completely interchangeable with equivalent steel parts.

Briefly, here's what we offer:

STRENGTH . . . Tested and approved to AN tensile strength specifications for steel nuts of the same size.

AVAILABILITY . . . sizes #6 through %" in designs that offer every important standard hex and anchor configuration including one lug, two lug, and corner types, floaters and gang channel.

NYLON INSERTS . . . in all anchor and channel types provide extended reusability - assuring elimination of maintenance problems created by replacement of "fixed" or inaccessible fasteners which are riveted or welded to the structure (hex nuts available with fiber or nylon inserts) and assuring the vibration proof holding power, reusability and self-locking action provided in'all ELASTIC STOP® nuts.

ELASTIC STOP NUT CORPORATION OF AMERICA



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Please send me the following free fastening information:

- ☐ Details on ESNA Blue "J's" ☐ Here is a drawing of our product.

☐ ELASTIC STOP nut bulletin

What self-locking fastener would you suggest?

City.

Circle No. 1 on Reader Service Card.



This unique nacelle is made possible by Solar's skill with stainless alloys

when navy patrol planes hit the runways, the impact calls for rugged construction. So in the famed Neptune series, Lockheed's designers made a radical departure starting with the P2V-5. They called for engine nacelles of stainless steel, to provide greater structural strength with less installed weight than conventional aluminum nacelles. Weighing only 370 pounds, each nacelle must support a Wright turbo-compound

powerplant weighing over 5000 pounds.

Solar was selected to take on the challenging job of producing these nacelles. It involves precise forming and welding of half- to full-hard stainless steels in fabricating the intricate skin and rib structure. With more than 550 detail parts, the nacelle assemblies required development of many special tools and processes.

Volume manufacture of stainless steel nacelles and other airframe structures typifies Solar's skills with high strength alloys—skills based on 27 years of research, engineering, and fabricating experience with these metals. This backlog of knowledge is available to every company faced with difficult applications of stainless and titanium alloys. How can Solar help you?





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Controls. Complete control systems utilizing the new Solar "Microjet" (2) principle for control of gas turbines, jet engines and pneumatic devices.

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MUNICIPAL AIRPORT



TULSA, OKLAHOMA

Circle No. 4 on Reader Service Card.

Cessna CH-1 and FlyRide

To the Editor:

I read with interest your run-down on the Cessna CH-1 helicopter (AMER-ICAN AVIATION, Jan. 3).

However, I question one of the statements made. It was that Cessna's forward mounting of the engine is

The forward-mounted engine in helicopters was first introduced in the FlyRide helicopter (Glenview Metal Products, Delanco, N. J.). This design preceded Cessna's by a few years (since the ship was brought along slowly by

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its inventor-Wm. E. Hunt-prior to Glenview's purchase of it).

The FlyRide's 140-hp Lycoming engine is easily accessible. The engine cowling can be removed quickly and easily for servicing or checking. This forward mounting and weight distribution naturally give the FlyRide the CG advantages ascribed "uniquely" to Cessna (appearing first in the FlyRide).

I'm not trying to minimize Cessna's efforts in any way. But I like to see credit for pioneering attributed to the proper people. Glenview is the first comproper people. Gienview is the first company to engineer, develop, and market a helicopter entirely on private capital . . . without benefit of Uncle Sam's endless supply of money. I admire Cessna for doing the same thing. For the first time in its short but turbulent history, the helicopter industry is about to become competitive. And with this competition, improvements and reduced prices (sensible prices) will come about. The FlyRide's single-stick control is the first step in simplified operation, making the helicopter practical for mass use.

WILLIAM J. BARBER

Advertising Associates Philadelphia, Pa.

(Claim for uniqueness of engine mounting came from Cessna in August 1954 and is not an original view of the writer. On the record, Cessna sought certification in May 1952, Glenview in October 1953-before that, who knows? Today CAA lists the CH-1 75-80% through certification and the FlyRide only 6%.-Ed.)

Braniff Article

To the Editor:

I want to compliment you and express our deep appreciation for the splendidly done article dealing with Braniff in the Jan. 3 issue of AMERICAN AVIATION, The article demonstrated a very thorough understanding of our situation on Mr. Murphy's part. The article was pleasing not only to me but to all of my associates here.

CHARLES E. BEARD President

Braniff International Airways



Cigarette Holders

To the Editor:

In En Route (Nov. 22) you wrote about your cigarette-holder experiences in European civil airplanes. I regretfully came to the conclusion that it must have been a KLM stewardess who restrained you from using the holder to which you seem to be so deeply at-tached. This affair intrigued me on account of the remarks about international regulations, etc., and so I immediately set out to solve the mystery.

It is really quite a simple matter. The stewardess did indeed have instructions to draw the attention of passengers—in a very friendly manner, of course—to the rule prohibiting the use of cigarette holders on board KLM planes. This rule is based on a regulation of the Netherlands Department of Civil Aviation, which objects to the use of cigarette holders in view of past experiences. A cigarette can very easily fall out of a holder and get into one of the nooks and crannies that are so numerous on a modern airliner. This is the view taken by the Dutch authorities and it is not an international regulation, as the stewardess wrongly informed you.

R. J. VOGELS

KLM Royal Dutch Airlines The Hague

Boundary Layer Control

To the Editor:

The Jan. 3 article by Mr. Stevens permitted Europe's expert to "sound off" on suggested improvements in boundary layer control and possibly opened the door for layman aerodynamicists like myself to present another view on the subject. At any rate, I am writing with a request that the opinions I am trying to present be constructively criticized.

First, to justify my trend of thought, let me present an analogy which de-scribes the aviation industry. Like a right-triangle the industry has its vertical leg (the helicopter) and its horizontal leg (the fixed-wing airplane) and strives to provide the most descriptive side, the hypotenuse, as the ulti-mate aim. No matter how compromised either right-angle leg becomes it cannot substitute for a hypotenuse and still retain the structure as a triangle. It therefore follows that the industry needs one more leg in its structure, which leg could in its abstract form replace both the other legs and still retain the triangular shape.

This hypotenuse has been recognized in commercial requirements for many years but the trend of development has been such that commercial needs are fitted to the shape of the industry rather than fitting the aircraft to the needs of its users. In other words, brawn has been, substituted for brains with the military motto "apply more power and hang the expense!" This crutch enginaering has not only driven the fixed-wing airplane out of the picture of economical commercial utility, but also portends prostitution of the helicopter's

Circle No. 6 on Reader Service Card. -

AMERICAN AVIATION



AERIAL "DETECTIVE" CUTS FLIGHT DELAYS

Electronic Ray Enables Continuous Engine "Check-Up" During Flight

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■ Ever waited while your mechanic tracked down an elusive "miss" in the engine of your car? Then you can imagine the time formerly required in checking the 144 to 224 spark plugs and thousands of ignition parts of a fourengine plane! And you can see why headlines like the one above, appearing when the Engine Analyzer was introduced, literally announced a new era of dependability—and safety—in flight.

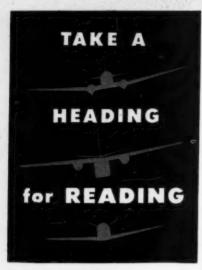
■ With the Sperry Engine Analyzer, no ignition defect can remain hidden — in flight or on the ground. Like a doctor's X-ray, it looks inside each cylinder, shows the exact performance of every valve, every spark plug, every part of the intricate ignition system. Before take-off, it enables quick "tune-up" to assure smooth, maximum power. In the air, the flight engineer watching the crisp images on his scope has a constant picture of each engine's performance—detects weaknesses that can be immediately corrected by adjustments—and

pinpoints defects that can be quickly attended to upon landing.

■ Now in use by many of the world's leading airlines, the Sperry Engine Analyzer has taken its place along with Sperry developments like the Gyropilot* Flight Control and Radio Beam Coupler, as another contribution to safer flight and more economical flight. From the passengers' standpoint, the Sperry Engine Analyzer adds increased dependability in airline schedules. From the airlines' standpoint—lower operating and maintenance costs. ***INT. REG. 47.5. TO. 1. CO. 1

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Positive communications in the most congested areas, coupled with finger-tip control, make this equipment most suitable as a primary means of communications under all phases of modern flight.

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excellent virtues. When the purse strings grow tighter the pulse of the airmobile industry will be required to slow down below that of the automobile industry due to the latter's relative merits and conservative approach to design regulation, and it is possible that the entire industry could collapse.

Boundary layer control has been recognized as a logistic "must" since long before the military began to foot the bill, and its initial applications are best known in slots and flaps which did not require ducting with resultant complex structures. Another extremely economical and practical application has been known for over a decade and recently proved its value in flight by an aircraft built with limited private funds. I am speaking of the CCW-5 and its application of the channel wing. Were this wing to use the "increase the horsepower" method of development and be granted a development contract on public funds, it might possibly turn out to be the desired third leg of the aviation triangle.

It is on this account that I am writing you for information. Has this remarkable invention lagged due to professional jealousy, to personal selfishness of big business, to politics of pursestring control, to apathy of the industry, to prejudiced technical reporting of biased writers, or is the whole thing a gigantic hoax and I one of its victims because of my desire to see the airplane a self-sustaining item of utility?

The use of a channel wing certainly lends itself to perfect powerplant installation with a view to ease of maintenance accessibility. Air filtering of dust and noise level of wasted energy should be minimized due to the structure, and a pod-mounted channel wing power package could be retrofitted to existing aircraft with an unexpected and exceptional performance increase. The projected turbine-shaft vs turbo-jet transport race of the bigtime airframe manufacturers would certainly be settled if the turbine shaft were installed in such a natural bay as a channel and the overall performance weighed against any other type of aircraft.

I can visualize innumerable uses of a channel-wing application for both military and commercial usage, but I feel the greatest combination would be that of a channel wing with a pod fuselage like that of the XC-120. It would not only focus a spotlight on two little-known and undeservedly overlooked inventions, but also would assure a permanent niche in gainful employment no matter what the international situation or economy. That two such worthwhile aeronautical projects should come from one small town of acknowledged fame, and yet remain so repressed in the public eye, is something that I am unable to comprehend.

BERT K. SANDS, JR.

"Elevation" Below

To the Editor:

In the En Route page for Nov. 8, which page I always read with the greatest interest, my eye fell, of course, on your remarks about the sign on Schiphol control tower indicating the "elevation," a term you would not like to use since the airport is below sea level.

I fully agree with your sentence: "The Schiphol Airport management disagrees." As to the remainder I would like to say one or two things.

I think the question, "Just how does one describe an airport that's below sea level?" ought to be submitted to ICAO, for is it not this organization that has decided about airports in Annex 14 to the Convention on Civil Aviation as follows?

Chapter 2. Aerodrome Data

2.2.1 The competent Authority shall determine the aerodrome elevation.

2.2.2 The aerodrome elevation shall be given in terms of the nearest metre or foot.

Finally I would add that the sign in question has not been stated quite correctly. It does not read "13 Feet Elevation Below Sea Level," but "Elevation: 13 Feet Below Sea Level," which does make some difference to me.

U. F. M. DELLAERT

Director of Schiphol Airport Amsterdam, The Netherlands

Viscount Safety Belts

REF HARLEY AD PAGE 38 JANUARY THIRD CLAIMING HARLEY SAFETY BELT STANDARD EQUIPMENT ON CAPITALS NEW VISCOUNTS AIR ASSOCIATES CURRENTLY SUPPLYING CAPITAL WITH SEAT BELTS FOR VISCOUNTS OUR KNOWLEDGE WE TO EQUIP ALL VISCOUNTS TO SET RECORDS STRAIGHT WOULD SINCERELY APPRECIATE A NOTICE IN NEXT ISSUE OF DAILY AND MAGAZINE TO EFFECT CAPITAL AIRLINES HAS ORDERED AIR ASSOCIATES CAA APPROVED SEAT BELTS FOR USE ON NEW VISCOUNTS THANKS

R J PIKE

AIR ASSOCIATES INC TETERBORO N T

Flight Safety Foundation

To the Editor:

On behalf of the Flight Safety Foundation . . . thanks for the boost you gave us in the editorial which appeared in the Jan. 3 issue of AMERICAN AVIATION.

Your magazine deservedly is widely read in aviation industry circles and I am sure your endorsement of our work will be most helpful in acquiring more and larger contributions.

J. H. TOWERS

Flight Safety Foundation, Inc. New York, N. Y.

Thanks for Support

To the Editor:

As one who has been closely in touch with the activities of the Flight Safety Foundation, I wish to express my appreciation for your editorial support of the Foundation's work and for your expression of appreciation for the support that Laurance Rockefeller has given to it.

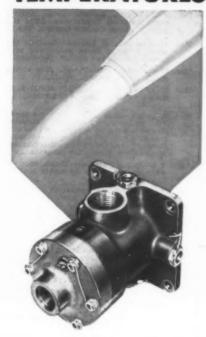
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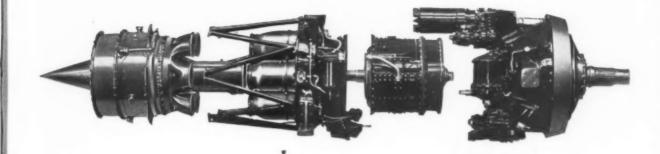
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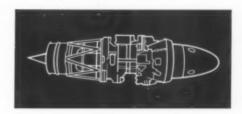
- Feb. 8-10—National Association of State Aviation Officials winter board mtg., Lafayette Hotel, Washington, D. C.
- Feb. 20-22—Fourth annual Texas Agricultural Aviation Conference, A&M College of Texas, College Station, Tex.
- Mar. 11—Institute of the Aeronautical Sciences national flight propulsion mts... (restricted), Hotel Carter, Cleveland.
- Mar. 26-23—Aero Medical Assn. 26th annual mtg., Hotel Statler, Wash., D. C.
- Mar. 28-Apr. 1—Ninth Western Metal Exposition, Pan-Pacific Auditorium, Los Angeles.
- Mar. 23-Apr. 1—American Society for Metals exposition and congress (including all-day session on aircraft and rocketry sponsored by the American Welding Society), Pan Pacific Auditorium and Ambassador Hotel, Los Angeles.
- April 5-7—Radio Technical Commission for Aeronautics Spring Assembly Meeting, Los Angeles.
- Apr. 16-20—American Association of Airport Executives annual mtg., El Conquistador Hotel, Tucson, Ariz.
- Apr. 18-21—Society of Automotive Engineers production forum and seronautic mts... Hotel Statler and McAlpin Hotel, New York City.
- Apr. 18-21—Society of Automotive Engineers, Golden Anniversary aeronautic mtg., aeronautic product forum and aircraft engineering display, Hotel Statler and McAlpin Hotel, New York City.
- Apr. 18-22—American Society of Mechanical Engineers, 75th anniversary mtg., Baltimore.
- Apr. 20-22—American Rocket Society spring mtg., Baltimore.
- Apr. 24-28—Airport Operators Council annual mtg., Hotel Olympic, Seattle.
- Apr. 28-30—American Helicopter Society, 11th annual forum, Mayflower Hotel, Wash., D. C.
- Apr. 29—Institute of Navigation's eastern regional mtg., Friendahlp International Airport, Baltimore.
- May 2-5—Society of Aeronautical Weight Engineers annual national conference, Hilton Hotel, Fort Worth.
- May 4-6—Fourth International Aviation Trade Show, 69th Regiment Armory. New York City.
- May 30-June 5—Aviation Writers Association annual convention, Montreal & Toronto.
- June 21-24—Joint mtg. of the Institute of The Aeronautical Sciences and the Royal Aeronautical Society of Great Britain, IAS Building, Los Angeles.
- June 21-24—Aviation Distributors and Manufacturers Association mid-year mtg., Breezy Point Lodge, Brainerd, Minn.
- June 23-25—Institute of Navigation annual mtg., Air University, Maxwell AFB. Ala.
- Oct. 11-15—Society of Automotive Engineers aeronautic mig., aircraft production forum, and aircraft engineering forum. Hotel Statler, Los Angeles.
- Oct. 11-15—National Association of State Aviation Officials annual mtg., Baker Hotel, Dallas, Tex.

INTERNATIONAL

- Mar. 2—Federation International des Transport Aeriens Prives (FITAP), mtg. of executive committee, Paris.
- Mar. 31-Apr. 1—Symposium on Boundary Layer Effects in Aerodynamics, National Physical Laboratory, Teddinston, England.
- Apr. 5—International Air Transport Association technical conference, San Juan. P. R.
- May 31—International Civil Aviation Organization Assembly, ninth session.

 Montreal.
- June 10-20—International Aircraft Show, Le Bourget Airport, Paris.





power in 4 packages

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- MOST IMMEDIATE TRANSITIONS in the aircraft and engine field, as seen by the Pentagon: Interceptors capable of flying at Mach 2.5 to Mach 3, vertical take-off planes, nuclear-powered aircraft, planes capable of long-range subsonic cruise and operation up to Mach 2 in the tropopause, powerplants capable of operating on special fuels, and engines that will make some of our subsonic planes truly supersonic.
- JET ENGINE NEEDS FOR THE IMMEDIATE future are placed in the 6600-22,500 pound thrust category. Long range goal is set for jet power-plants ranging from 4400 pounds to 33,000 pounds thrust. Progress expected by military services is highlighted by anticipated 1957 deliveries of engines ranging between 9300 and 15,000 pounds thrust dry.
- CURRENT SPENDING RATE OF MILITARY services for turbojet engines is about \$1 billion per year with an additional \$200 million going for new engine and product development.

At present this sum is going into ten turbojets (see page 47) which power 29 combat airframes. Engines include the Pratt & Whitney J48 and J57, General Electric J47 and J73, Curtiss-Wright J65, Westinghouse J40 and J46, and Allison's J33, J35 and J71.

Three projected engines, destined to power 19 combat airframe types, are GE's J79, Wright's J67 and P&W's J75.

UNITED STATES NOW HAS "AN EFFECTIVE MISSILE program," one that is just about at "a payoff stage," according to top Defense Department officials. Pentagon missile managers are generally satisfied with the competitive spirit between the services, despite some resulting duplication.

Industry-wise, defense planners feel best results can be obtained by consentrating system responsibility. Prime contractor who tries to do everything within his own company is doomed to failure, officials claim. Experts from associated fields must be called upon for best results.

AIRCRAFT PRODUCERS IN THE LOS ANGELES area have a two-year production backlog in sight. Deliveries have been running at about \$2 billion a year and the present confirmed backlog is about \$4 billion. Included in the backlog are orders for 191 large commercial transports.

Pulse of the Industry

TRUNKS' PROFIT MARGIN NARROWS

BECAUSE passenger carrying accounts for nearly 90 percent of all airline revenues, one of the best barometers of the air transport industry's well-being is its passenger load factor.

PERCENT:

MILLION DOLLARS

14

60

10

10

10

1950 1951 1952 1953 1954

EFFECT OF 1% CHANGE IN LOAD FACTOR

BREAKEVEN

Graph at left, based on domestic truck airline data from the Air Transport Association, shows the airlines' actual load factor, 1950-54, and the breakeven load factor for the same years.

(Actual load factor is the percent of airline seats available that were actually occupied by paying passengers. Breakeven load factor is the percent of available seats that must be occupied by paying passengers in order to cover costs.)

As can be seen from the graph, the margin of profitable operations between actual and breakeven load factor has been narrowing since 1951.

For the most part, in the period since World War II, rising airline costs have been in hot pursuit of rising airline traffic. New, more efficient equipment, which carried more people more miles at higher speeds, has helped greatly to offset rising costs. The DC-6, Convair, Constellation, and Stratocruiser helped to hold down the breakeven load factor. More recently the DC-6B, Super Constellation, Martin 404, and DC-7 have come on the scene to buck the high cost of operating an airline.

But the new aircraft, together with careful management, have kept breakeven load factor only about steady the last four years, while the increased passenger-carrying capacity put into operation by the airlines (despite the fact that many more people traveled by air) has resulted in a progressive lowering of actual load factors since 1951.

As capacity continues to climb, with the airlines offering more schedules and larger planes, the margin between actual and breakeven load factors will continue to narrow. Back in 1950 a one percent change in load factor made a difference of \$6.8 million to the airlines (broken line); today a one percent change adds up to a cool \$14 million. Needless to say, this has the airlines worried.

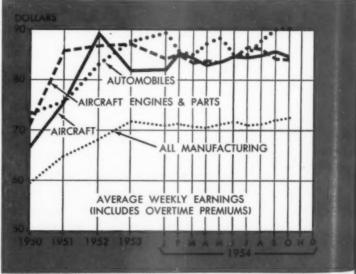
AIRCRAFT WORKERS AMONG NATION'S HIGHEST PAID

WORKERS in the aircraft and aircraft engines and parts industries are among the highest paid in the country, according to data from the Bureau of Labor Statistics (see chart at right.)

Workers in these industries average about \$85 per week, including overtime pay, whereas manufacturing workers in general average only \$72 per week, including overtime.

While automobile workers are better paid and average \$90 per week, that figure fell to about \$85 twice during 1954, reflecting uncertainty in automobile sales last year and less than 40-hour work weeks.

Rapid expansion of aircraft production following outbreak of the Korean conflict pushed up average weekly earnings in the aircraft industry almost \$35 between 1950 and 1952, with wages for aircraft engine and parts workers rising almost as fast,





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NEW MISSILE SCIENCE CENTER, a \$4 million structure soon to rise at Van Nuys, Calif., will house Lockheed's expanding Missile Systems Div. This is the first of four similar units designed as part of a \$10 million master plan for the division.

BUSINESS

Backlog Alone Insures Two Years' Work

THE MASSIVE financial outlays packed into the fine print of the federal budget and reported elsewhere in this issue took the industry spotlight as January moved into its second half. As the signs of the future were poured out and pored over in Washington, signs of the past were forthcoming from the west.

Convair reported that deliveries of its Convair-Liner design reached 715 during the year just past, including 240's and 340's, military and civil. The firm delivered 230 aircraft of all types during 1954, most of which were Convair-Liners.

From Lockheed came a similar tally: total deliveries of L-1049 Super Constellations reached 161 in 1954, with 93 commercial and 68 military. Fortyone were delivered to 12 airlines during the year. On the heels of the announcement came word that Lockheed was setting up a new division to take responsibility for all Constellation production within the California division.

As if to confirm the stability of such production, the outlook for employment in the Los Angeles area was described as promising by the western region manager of the Aircraft Industries Assn., Capt. L. D. Webb. Citing a current

backlog of some \$4 billion among L. A. plants, AIA vice president Webb forecast at least two years of production on the basis of these orders alone.

Elsewhere on the business scene:

- Westinghouse Electric Corp. received an \$18.7 million order from the Navy for turret systems.
- Chance Vought Aircraft, Inc., has received a \$16.4 million Navy contract for more than 50 Regulus guided missiles. The firm received at the same time a \$3.5 million contract for confidential research and development.
- Curtiss-Wright Corp's Wright Aeronautical Div. was awarded a contract by the USAF for \$8.1 million worth of R-3350-34 engines.
- Beech Aircraft Corp. was slated to receive \$6.1 million from the USAF for generator sets.
- Glenn L. Martin Co. received a \$5 million research and development contract for work on the XP6M-1 Seamaster jet seaplane.
- Grumman Aircraft Engineering Corp. will supply \$3.8 million worth of parts kits for Navy F9F-6 and -7 fighters.
- Curtiss-Wright Corp.'s Propeller
 Div. was awarded a contract for \$2.96

million worth of propeller assemblies and spare parts.

DIVIDENDS

- Beech Aircraft Corp. will pay a 30¢ dividend Feb. 8 on close to 600,000 shares of common stock of record Jan. 25.
- Delta-C&S Air Lines will pay 30¢ per share on March 7 to stock of record Feb. 18.
- Northwest Airlines will pay 28¾ ¢ in regular quarterly dividends on Feb. 1 to holders of 4.6% cumulative preference stock of record Jan. 20.
- Stanley Aviation Corp. paid a semi-annual dividend Jan. 10 to stock of record Dec. 31.

FACILITIES

- Thompson Products, Inc., was awarded a USAF contract of \$5.4 million for J57 jet engine component facilities.
- Convair received a \$2.5 million
 Air Force contract for F-102 production
 and flight test facilities.
- Douglas Aircraft Co.'s El Segundo Div, finished moving into its new A4D assembly facility, three buildings located south of the El Segundo plant.
- Ohio State University has a contract of over \$190,000 for construction of a Mach 16 hypersonic wind tunnel and the conduct of research for Army Ordnance.

Jan. 31, 1955 - Vol. 18, No. 18

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Profit & Loss

Earnings per Net Earnings Common Share 1953 1953 1954 Period Company Air Associates Inc. FY to Sept. 30. \$344,311 \$141.658 \$1.31 20.44 1.05 Beech Aircraft Corp. Qtr. to Dec. 31 \$870,000 \$627,445 1.45 Bendix Aviation Corp. FY to Sept. 30 \$25.5 mill. \$17.4 mill. 11.23 8.20 McDonnell Aircraft Corp. 6 mos. end 12/31 \$2 mill. \$2 mill. 2.77



Hertz opens new office at the PORTLAND, ORE. International Airport

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ION



Hertz, already at most major airports everywhere, expands again to bring airlines NEW PASSENGER REVENUE. The modern, attractive Hertz counter above, located at the Portland, Ore., International Airport, is Hertz' latest addition to its long list of airport rent a car offices. This new office, like other new Hertz airport offices springing up all over the country, is helping to bring you new passenger revenue. And here's how it's being done!

Hertz originated the Plane-Auto Travel Plan. Because of it, many travelers no longer drive from city to city just to have their car at their destination. Instead, they fly in speed and comfort—rent a Hertz car on arrival. And they're assured of a clean, new Hertz car wherever they go because Hertz serves them at more airports and more cities than any other rent a car system. In fact, there are nearly 800 Hertz offices in over 550 cities throughout the United States and foreign countries.

To tell your passengers of the Plane-Auto Travel Plan, Hertz spends over \$1,000,000 a year in advertisements in national magazines. No other company spends nearly as much to promote the plan. Neither can any other company offer your passengers 9400 clean, new cars... and more than 30 years' experience in courteous rent a car service.

Hertz also assures you of steady Plane-Auto Travel Plan business because more than 1,500,000 qualified persons now hold Hertz Charge Cards and Courtesy Cards. Hertz also honors Air Travel Cards.

How you can help sell the Hertz Plane-Auto Travel Plan

Promote the Hertz Plane-Auto Travel Plan in all your advertising, displays, folders and any other advertising and promotional programs. And best of all: urge your ticket sellers and reservation clerks to ask your passengers this simple question: "May I reserve a Hertz car for you at your destination?"

For complete information about the plan, write:

HERTZ Rent A Car SYSTEM

Department C15, 218 S. Wabash Ave., Chicago 4, III. Phone: WEbster 9-5165.



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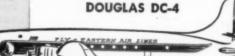
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Eastern Air Lines (in common with most of the world's airlines) derives multiple advantages from the use of Vickers Hydraulics. First, it has the best aircraft hydraulic equipment available. Second, it obtains the many benefits of standardization. Third, it has the undivided responsibility of a single source.

Vickers Hydraulic Equipment has proved by hundreds of thousands of hours in the air its claims of longer life, greater dependability, better performance and lower maintenance.

The interchangeability resulting from standardization means a smaller and more flexible inventory of spare parts. It minimizes the number of test and inspection flxtures. It makes for quicker and easier training of maintenance personnel through the need for familiarization with fewer products.

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Maze, Haze, and Stumbling

THERE IS MUCH that one can say favorably about the Eisenhower Administration, but the manner in which it has handled civil aviation matters is enough to shake the confidence of those who believe in all of the promises for good government.

We refer, of course, to the inept handling of the vacancy on the Civil Aeronautics Board and to the growing delays in processing and deciding important international cases in the White House.

The term of Oswald Ryan expired Dec. 31, but it shortly became apparent that the White House was in no way prepared to meet the issue of re-appointment head-on, nor did it have an alternative ready.

The shocking thing about the handling is that the White House apparently believes the vacancy should be filled by a sort of popularity contest instead of outlining the requirements for the quasi-judicial position and then actively seeking the best man qualified for the job. It is a jolt to discover that the White House considers the CAB post to be on a political patronage level and that it feels obligated to submit names of prospects to a wide number of people in government and industry. In this respect the Eisenhower Administration is no better than the Roosevelt and Truman regimes, or, for that matter, the old Post Office days when politics reigned supreme in the open.

The number of individuals in and out of government who have had their fingers in the pie would fill a large stadium. Secretary of Commerce Sinclair Weeks has been a key figure in the screening, which is evidence in itself that the CAB is no longer considered to be an independent agency but is actually a political creature of a cabinet post.

From the beginning of the maze and haze, the White House sent out word that it was looking for "a big name." This means, primarily, a business man or a lame duck congressman. Since there are already three CAB members cut of four who are lame ducks, it hardly seemed possible that the White House would have the gall to load up the AB with still another defeated Congressman, but the fact mains that the post was offered to several defeated senators either genuinely or with tongue in cheek.

It is ridiculous to think that "a big name," per se, is going to cure the ills of the CAB. At the very minimum a outsider from business requires a year just to begin to get the ropes of the job. Two years is more like it, at which ten a businessman feels he has served his term and returns to private life, with virtually nothing accomplished. What is needed is a career man, or at least someone who desn't feel that it's a sacrifice and public duty to take a CAB post, and someone who has no ties to industry and desn't have to win a popularity contest.

In all frankness, although we have a high regard for

his integrity and industriousness, we feel that the 1954 CAB Chairman, Chan Gurney, has been dilatory in his duties. Mr. Gurney decided not to "bother" the White House with CAB problems. He decided to leave the vacancy and other problems for someone else to decide. He has sat on the sidelines and has offered no solutions of his own. This shyness and modesty, while a great asset on the right occasions, is out of place under the present circumstances.

A large business concern picks its executives for their ability to make reponsible decisions. A vice president who sits back and says "the head office knows where to find me if they need me" isn't going to last very long. There has never been a time when the White House hasn't welcomed positive, sound solutions. Mr. Gurney has only compounded confusion by failing to exert leadership and letting somebody else take the lead.

It hasn't been a pretty picture. And it hasn't been helped any by the 2-2 votes in the CAB on important matters, all of which means that the day-to-day regulatory operations for one of the nation's biggest and fastest growing public utilities have been stymied. As we warned several times during 1954, CAB (and inevitably the industry with it) are heading for trouble over what amounts to just plain ineptness and a distorted view of what's needed.

Teaching Materials

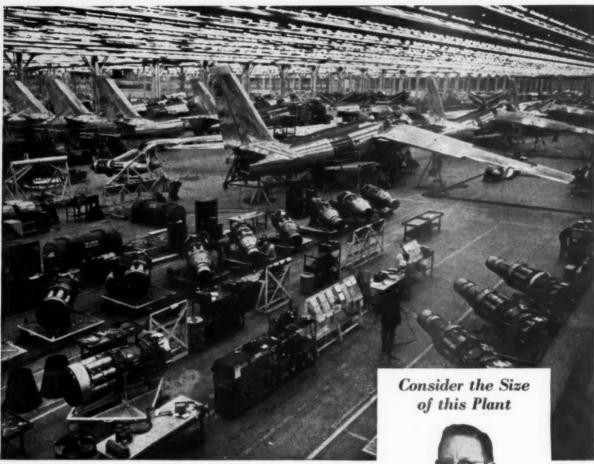
THE DAILY MAIL brings to every editor's desk a mass of booklets, brochures, and other reading material. Sometimes it gets attention, sometimes not. A few weeks ago two booklets came to our attention which seemed to merit further investigation. We're pleased to report that if you haven't become aware of them it's time you did.

After some inquiries we discovered that the two booklets were among six which have been issued by the National Aviation Education Council, 1115 17th Streets, N.W., Washington 6, D. C., and are available at modest prices with low rates for bulk orders. All six are exceptionally well done, and are entitled respectively, Look to the Sky, Jets, Helicopters, Aviation Activities, A Day in the Life of a Jet Test Pilot, and Aircraft Number 116, the story of the aircraft plant.

All are designed to interest and educate children in aviation. We've been skeptical, sometimes, about educational projects, but these booklets are excellent. The NAEC is non-profit and hence would undoubtedly appreciate industry support.

ON

Aircraft Engineers



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says R. W. Middlewood, Chief Engineer

The main building here in Marietta, Georgia, is big because it was built big for the express purpose of efficiently manufacturing the largest of multi-engine airplanes.

In this plant Lockheed Aircraft Corporation's Georgia Division, with a close-knit team of 14,800 people, is turning out big C-130A assault transports and six engine B-47 jet bombers, in addition to the modification of early B-47's. Yet because of the 76 acres under one roof there is ample space expansion. Here we are building the aircraft of today while planning those of tomorrow. Room for more production—room for more Aircraft Engineers.

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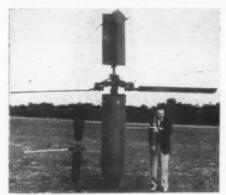


Marietta, Georgia

Industry Spotlight

· United Air Lines, which has flown almost 34 million revenue planemiles with its fleet of 54 Convair 340's, temporarily grounded the fleet following an emergency landing at Dexter, Ia., Jan. 19. However, normal operation was resumed the next day when investigation showed that a nut attaching the elevator trim tab idler to structure had come off, jamming the control. As a result, CAA ordered an immediate security check of elevator controls on all 340's.

• Entry of de Havilland into the Viscount propeller program holds promise for Hamilton Standard getting a share of future Rolls-Royce Dart business, particularly for American-operated equipment. Hamilton had previously urged Capital Airlines to use de Havilland rather than Rotol propellers on its fleet of Viscounts because of a licensing agreement between de Havilland and Hamilton. Now Central African Airways has ordered de Havilland props on its Viscounts.



 About 700 experimental supply drops have been made with a new device known as a rotochute and developed by The Kaman Aircraft Corp. for the United States Marine Corps. Device consists of a standard M2 supply container equipped with folding, telescoping rotor blades. Carried like a bomb under the plane's wing, with the rotor folded and telescoped to half its normal span, it can be dropped with high precision into small areas. It makes possible high speed, low altitude

drops relatively free from wind effect. Drops have been made from a Piper Cruiser and Grumman F7F.

• U. S. Air Force has taken delivery on the first production model Allison T56 engine 80 days ahead of schedule. Three more T56's, scheduled for use in the Lockheed C-130, are due for delivery before the end of the month.

• First official confirmation of Philco Corp's contract with the Navy Bureau of Ordnance to build the air-to-air Sidewinder missile has come from the company's Government and Industrial Div.

 Six radar beacon transponders, designed by Melpar, Inc. and produced by Union Switch & Signal Div., Westinghouse Air Brake Co., have been installed in DC-3's of Lake Central Airlines for evaluation. The USS radar beacon, weighing 27.5 lbs., was shown to airline operations personnel attending the Air Transport Associations' Operations & Communications Conference at Indianapolis earlier this month. They form part of CAA's Technical Development & Evaluation Center's beacon evaluation program.

· Lockheed's XF-104, which first flew last March, has now made approximately 135 flights at Edwards Air Force Base. Indications are that the test program for the original prototype, and the second ship which first flew last fall, will be moved to Palmdale soon.

• A small jet engine, designated the MX2273, is being developed by Genral Electric's Small Aircraft Engine Department at Lynn, Mass., for use in Air Force drones and pilotless aircraft.

· Several foreign airlines have plans for testing the General Mills-Ryan flight recorder. KLM is installing the electro-mechanical recorder in a Lockheed -749A Constellation, and TAI, the French independent, will test it in a Douglas DC-6B. Air France and Sabena have also expressed interest in testing he 251/2-lb. unit which United, Braniff, Northwest, and Continental air lines ave tested in this country.

 Convair has started assembly on the first Convair 340, to be known as he R4Y, for the U. S. Navy. The last two commercial 340's are scheduled for ompletion this month.



gineering Department on your aircraft seat problems—you can get top styling and cost-saving assistance with TECO's complete manufacturing facilities.



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ION



Lockheed's New Navy Super Constellation

Latest giant plane to use B. F. Goodrich wheels and brakes

DESPITE 75 tons of take-off load, the Navy's new R7V-2 "Super Connie" cruises at 440 mph. The problem was to set her down gently, stop all her weight and speed quickly. What solved the problem? The B. F. Goodrich wheel and brake designs that earned superior efficiency ratings on heavy bombers, largest airliners.

B. F. Goodrich brakes halt this Super Constellation fast because they operate on a highly efficient principle. Here's how simply this B. F. Goodrich principle works:

When fluid pressure is introduced, a

full circle "rube" expands radially, applying the pressure to brake blocks around the full circle of the drum. This lifts each brake block evenly and instantly with equal braking pressure. It results in better load distribution on the lining, more even wear, longer lasting brakes. When pressure is released, strong retractor springs insure positive clearance... fast!

The B. F. Goodrich wheels on this Lockheed Super Constellation are made of magnesium alloy. This gives them extra strength without added weight. They easily passed the 200,000 lb. radial load test.

B. F. Goodrich De-Icers and fuel cells were also chosen as standard equipment for the R7V-2. Other B. F. Goodrich products for aviation: tires, heated rubber, Pressure Sealing Zippers, Avtrim, inflatable seals, Rivnuts, hose and accessories. Write The B. F. Goodrich Company, Aeronautical Sales, Akron, Ohio.

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FIRST IN RUBBER

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DEFENSE BUDGET: How It Affects Industry

BY HARRY S. BAER, JR.

FISCAL 1956 spending for air power will be the largest in peacetime with about two-thirds of the Defense Department's projected outlay earmarked for air power and related programs starting July 1.

Air Force, Navy, and Marine Corps combat and support units will have 36,000 aircraft in active use by June 30, 1956 (compared to 34,000 on June 30, 1954). In succeding years, they will continue to move toward the present objective of 40,000 planes. The Army's goal is 3600 aircraft, with more than a 20% increase in helicopters the next two years.

For the entire Defense Department operation, President Eisenhower asked for \$32,899,000,000 in new money—this out of a total U. S. budget request of \$58,642,000,000. Breakdown of this amount among the services and for operation of the Office of the Secretary of Defense is:

AF—\$14,536,000,000 Navy—\$8,957,000,000 Army—\$7,303,000,000 OSD—\$627,000,000

An additional \$1,476,000,000 (which rounds out the \$32,899,000,000 new money) is to be allocated later.

Fiscal 1956 defense spending, estimated to total about \$34 billion, is divided among the three services this way: AF—\$15.6 billion (compared to

\$15.2 billion for fiscal '55); Navy— \$9.7 billion (compared to \$9.775 billion in fiscal '55); Army—\$8.850 billion (compared to \$8.9 billion in fiscal '55).

Of top importance, of course, is the new money for aircraft and related procurement—\$6,853,000,000 for the AF and the Navy. AF requested \$6.1 billion while Navy Bureau of Aeronautics sought \$753 million.

Actually, however, the AF will incur obligations of \$6,388,149,000 for aircraft and related equipment during fiscal 1956. And here's how:

To fiscal 1956's new money (\$6.1 billion) will be added an unobligated balance brought forward from prior years' appropriations (\$3,625,000,000) and also reimbursements from other accounts (\$13,149,000). This will make available for obligation in fiscal 1956 a total of \$9,738,149,000. Of this, it is estimated that aviation contracts amounting to the \$6,388,149,000 will be awarded. The balance of \$3.35 billion, although programed, will not actually be placed under contract until after fiscal 1956.

In the forthcoming fiscal year, the AF's \$6,388,149,000 will be obligated as follows:

- Aircraft and related procurement ...\$5,763,038,000
- Guided missiles \$ 602,964,000
- Industrial mobilization \$ 22,147,000

For Navy's BuAer, it's a similar story. Although BuAer's fiscal 1956 money for aircraft and related buying is \$753 million the Navy in the next fiscal year will actually incur obligations estimated at \$1,625,086,000. Here's how:

To BuAer's fiscal 1956 new money (\$753 million) will be added an unobligated balance brought forward from prior years' appropriations (\$1,388,650,000) and also reimbursements from other accounts (\$200,000). This will make available for obligation in fiscal 1956 a total of \$2,141,850,000. Of this, it is estimated that BuAer will award contracts totaling \$1,625,086,000 during fiscal 1956. The unobligated balance of \$516,764,000, although programed, will not actually be placed under contract until sometime in fiscal 1957.

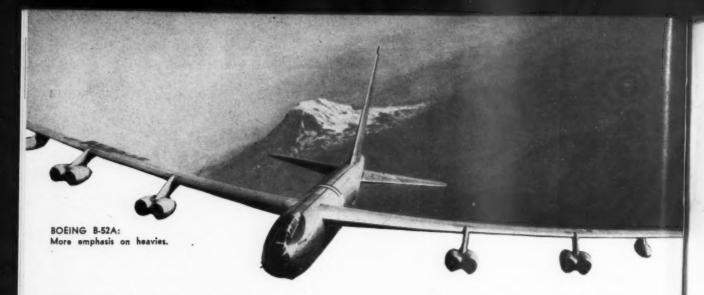
In fiscal 1956, BuAer's \$1,625,086,-000 will be obligated as follows:

- Aircraft procurement\$1,567,132,000
- Training equipment \$ 18,954,000
- Aircraft modernization\$ 39,000,000

Other facts and figures brought out with the new budget include: By the end of fiscal 1956, total number of AF, Navy, and Marine Corps aircraft in combat units is expected to be about one-fourth greater than at the beginning of fiscal 1955. Number of jets will increase by more than a third dur-

BACKLOG: Recent AIA figures show a continuing growth in backlog of orders reported by manufacturers of complete aircraft, aircraft engines, and propellers, From \$5,039,000,000 Dec. 31, 1950, backlog grew to \$16,752,000,000 by Dec. 31, 1953. Most recently reported figure, for Sept. 30, 1954, showed a backlog of \$14,859,000.000.

NET SALES: Quarterly net sales reported by manufacturers of complete aircraft, aircraft engines, and propellers have shown consistency and stability during the past two years. In March, 1953, industry reported net sales of \$2,024,000,000, and for the remaining quarters of 1953, the figure increased slightly. Most recent report, for Sept. 30, 1954, showed \$1,954,000.000.



ing the same period. By June 30, 1956, AF combat units will be almost 100% jet equipped; Navy and Marine units will have about 15% more jets than at the beginning of fiscal 1955.

What's in store for U. S. air power of the immediate future was presented in this fashion in President Eisen-

hower's budget message:

• Air Force — Present buildup to 137 wings by mid-1957 will continue with 130 wings expected by June 30, 1956—119 of which will be combat wings; the remaining 11 troop carrier wings. AF expects to have 121 wings by June 30, 1955—108 of which will be combat wings with the remaining 13 as troop carrier wings.

Thus, the AF wing timetable has undergone upward revision in the past year. The 130 wings by mid-1956 include three more than were anticipated.

Active aircraft inventory in the AF this summer is expected to be 22,400 planes. It will increase to 22,900 aircraft by the end of fiscal 1956.

• Navy & Marine Corps — Naval carrier air groups will be increased by one from the present 16 to 17. An additional attack carrier (Forrestal class), equipped with modern aircraft, will be added to the fleet. The Navy will continue to maintain 15 anti-submarine warfare squadrons.

Current level of some 10,000 Naval and Marine operating aircraft will be maintained, with the Marine Corps continuing its three air wings.

• Army — Although the Army is seeking no new procurement and production money for the second year in a row, it expects to have \$2.5 billion to obligate for this purpose during fiscal 1956 as a result of prior years' appropriations and transfers. This will include Army spending for liaison aircraft, helicopters, and guided missiles.

Research and Development money

requested by the three services and the amounts expected to be available for R&D purposes include:

Service	Request for Fiscal 1956	Money Avail- able for Fiscal 1956 After Adjustments
AF	\$570,000,000	\$607,388,998
Navy	\$431,933,000	\$433,873,000
Army	\$333,000,000	\$367,767,000

Breakdown among the three services on the amount of fiscal 1956 R&D money earmarked for (1) Aircraft and related equipment, and (2) Guided missiles and related equipment includes:

Service	Aircraft R&D	Missile R&D
AF	\$155,133,998	\$105,008,000
Navy	\$108,466,000	\$ 61,811,000
Army	\$ 17,576,000	\$ 75,639,000

In his budget message Jan. 17, President Eisenhower was careful to point out that "the growth in our effective air power is far greater than these numbers indicate, for our aircraft continue to increase in size, speed, range, and striking power."

Wilfred J. McNeil, Assistant Defense Secretary (Comptroller), in discussing the new budget, commented, "There is going to be an impact on some aviation companies because the

product mix is changing."

In noting that 60% of the expenditures for major equipment will be for aircraft, McNeil said there would be more emphasis on interceptor types rather than fighter-bombers, on heavy types of transports rather than medium or light transports, and on heavy bombers rather than light bombers.

McNeil said total aircraft 'acceptances next year would run about 6000, compared to about 7000 for the current fiscal year. He noted, however, that "the dollars will be about the same, but the mix of aircraft is different."

"There are considerably larger,

more expensive type aircraft," he explained. "Some aircraft I would have forecast for purchase last year—such as certain fighters to replace earlier models—have not come along as we expected. Without these, the dollar level will stay approximately the same as we had forecast, but the number of aircraft purchased will drop off because we will be accepting larger, more expensive aircraft in fiscal 1956."

Although guided missile expenditures have increased and will continue to do so, McNeil said the forthcoming boost in missile money is smaller than was previously anticipated. He attributed this primarily to "technological developments," adding that "they don't come along as fast as a hundred people, scientists, and engineers will assure you

they can."

Research and development expenditures are going to continue at about the

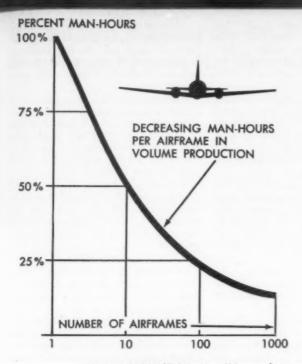
same level, McNeil said.

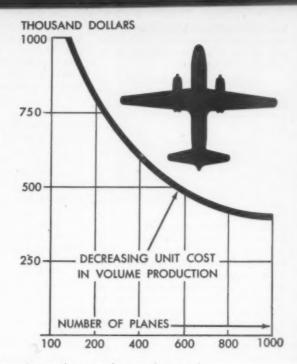
He predicted spending on electronics as a whole would increase somewhat "when you consider the increased amount of electronics going into aircraft and ships and as parts of missiles." Electronics for ground communications, however, will go down and "I think will stay down for some time," he added.

Expenditures for production—equipment and facilities (other than public works and part of the defense procurement program) have been essentially completed, he said. There will be some money spent for such equipment during the next few years due to new models and new tool requirements, he added, but the expenditures will continue at the present low level.

"Our day-to-day operating expenditures are lower this year than last," McNeil said, "and there is not going to be much change next year, but the following year I think they will be some-

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VOLUME PRODUCTION: How U.S. manufacturers cut man-hours and costs on large production orders.

what higher and go up in the future."

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Military construction is going to be somewhat higher next year, with increases due for the Army and the Navy over the amounts they had for this purpose during the past few years. This is for continental defense, for extension of early warning lines which the Navy will operate, and expansion of Army NIKE missile installations. Air Force construction will continue at about the same level for the next couple of years.

McNeil mentioned that military assistance would run about \$2.8 billion—close to the \$3 billion level it has been at in recent years. He indicated that the Defense Department may "have a little more specific assignment of responsibility than before" over how the military aid funds are put to use.

The Assistant Defense Secretary estimated that the Defense Department carry-over at the end of fiscal 1955 would be \$46.7 billion. Between \$36 billion and \$37 billion of this amount represents outstanding obligations, most of which will be for undelivered material and construction work in process.

He set a carry-over estimate at the end of fiscal year 1956 of \$41.2 billion. Of this amount, he estimated that \$6.5 billion would remain unobligated at the end of fiscal 1956, commenting that "if we get to that point, we probably are at about a level that would be a reasonable carry-over of unobligated money."

"Air Force at the end of this year probably will have a little over \$3 billion unobligated," McNeal explained further of that, \$1.5 billion is earmarked for initial spares for aircraft now under construction, but for which spares lists have not been given to the manufacturer.

The Defense Department is also seeking \$100 million in new money for "reserve tools and facilities," an implementation of a program in progress.

National Advisory Committee for Aeronautics is asking for \$63.5 million for salaries and expenses and \$13 million for construction and equipment in 1956, compared to the current, comparable fiscal year's figures of \$51 million and \$4.6 million, respectively.

NACA plans to use the \$63.5 million this way: \$33.6 million for aerodynamic research, \$18 million for powerplants research, \$8 million for aircraft structural research, \$1.8 million for operating problems research, and \$1.4 million for headquarters management and coordination.

What can the aircraft industry expect in the way of employment, earnings, profits, and general business conditions as a result of the new budget?

Fiscal 1956 may be much like other recent years, perhaps such as calendar 1954. But there will be, as McNeil put it, "an impact on some aviation companies because the product mix is changing."

Such an area might well be the guided missile field in which many aircraft manufacturers are very active. In the past four years, the military's activity in missiles has more than quadrupled.

Whereas in fiscal 1952 new obligation authority for guided missiles for both the AF and Navy totaled only \$214 million, in fiscal 1956 these services are requesting \$923 million—\$700 million by the AF and \$223 million by the Navy. Such increased funds are bound to have an impact on various aircraft companies, depending how far along they are in the business of manufacturing guided missiles.

Similarly, recent difficulties experienced with certain fighters and interceptors, including some in the prominent century series will mean a more rapid flow of AF money into bombers over the next several months—while "bugs" are being worked out of the fighter production program.

If slippages had not occurred in the fighter field toward the end of 1954, last year would have marked a much more successful period for the AF. Top AF officials expressed disappointment because some of the latest fighters could not be placed in the AF inventory more quickly. As one authority told AMERICAN AVIATION, "It was just a case of not getting the planes, so in the fighter field we have had some misses."

General aircraft industry impression about the future, it has been indicated, is that there may be more stability than perhaps at any time in the history of airplane production. Some officials feel that fiscal 1956 budget will be representative of future budgets, perhaps for the next four or five years.

The aircraft industry has been blessed with the element of stability much longer than usual, but the drive to eliminate "peak-and-valley" production still continues. Although unit production of military aircraft has undergone a gradual decline recently, industry's output of airframe weight has remained fairly constant.

Aircraft Industries Association reported overall airframe weight output during 1954 was about 150 million pounds, about the same as the year before.

A downward trend in monthly unit production of military aircraft, begun last year, is expected to continue through this year and possibly others. Deliveries of military aircraft, representing 85% to 90% of the industry's effort averaged just under 900 planes per month in calendar year 1954, AIA reported. This was a total of some 10,500 to 10,800 units for the year.

With deliveries expected to be somewhat less through 1957, AIA is careful to point out that employment, sales, and pounds of airframe produced will not decline to the same degree as unit production. Reasons for this, AIA officials note, are:

(1) Aircraft now are being built heavier.

(2) An increasing amount of production effort of the aircraft manufacturing industry is being devoted to guided missiles (as has already been noted).

(3) Research and development is going forward at a relatively high level.

AIA forecasts that monthly military aircraft deliveries will drop to somewhere near 800 units by next December. It expects total military aircraft production in calendar 1955 to be between 9700 and 10,000 planes.

Aircraft sales of between \$7.9 billion and \$8.1 billion are anticipated this year, not too far off from the \$8.6 billion volume for 1954. Thus, 1955 has a good chance to be the fourth straight year that industry sales reached or exceeded \$8 billion—an unusually stable level of operations.

As for the 12 largest airframe manufacturers, 1955 sales are expected to run about \$4.8 billion. With the profit margin expected to be about the same as during 1954—about 3.5%—1955 profits for the top dozen companies will be about \$168 million.

This compares to some \$180 million profit for the same 12 companies made last year on sales totaling between \$5.2 billion and \$5.3 billion. (In 1953, the 12 companies made only \$117,760,000 on total sales of \$5,120,000,000, at a profit margin of 2.3%.)

With this financial outlook, eager buying of leading aircraft equities at greatly increased levels is expected to continue.

Employment in the industry is expected to continue at a high level with the average for 1955 predicted at some 755,000 workers.

Requirement for investment in facilities will continue, AIA forecasts, even though the scheduled expansion of plants and equipment for volume production has been virtually completed. Advances in aeronautical science have caused a mounting need for acquiring and modernizing research and test equipment and facilities.

In general, top military aviation procurement leaders are satisfied with the current industry effort, AMERICAN AVIATION has been informed. They offer verbal orchids to aircraft manufacturers for what they consider a general trend

in cost cutting.

Noting there were some "beautiful jobs" in this respect by some firms, one high AF official said the best indicator to determine such progress is the reduction in manhours as production progresses.

He noted that one manufacturer of a modern bomber reported 112,000 manhours were required for final assembly of the first unit off the production lines. But after producing more than 700 of the aircraft, manhours for final assembly were down to 4150.

Asked why he felt U. S. aircraft producers were having such success in fulfilling the military's needs, this AF leader said he felt a combination of the following three factors was largely responsible:

(1) Proper scheduling whereby a manufacturer has "a good run" on a production item, lengthy enough to make plans for the future and avert disruptions.

(2) A sharpening of industry management which has brought about improved efficiency and competitive cost consciousness.

(3) Better technical staffs which keep an aircraft company free from technical problems and resulting disruptions in production schedules.

Help for Small Businesses Suggested in Plan

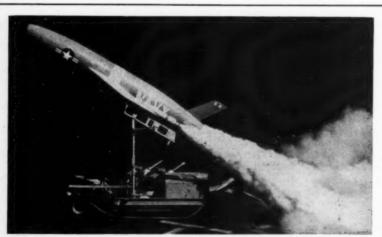
Non-production problems of small manufacturing firms may be eased by a merger plan proposed by the Air Equipment Co., Inc. The California firm offers to take the weight of sales promotion, research, engineering, and similar functions off the shoulders of small companies which find themselves unfamiliar with such subjects or unable to maintain adequate staffs.

Subcontracting would also be arranged among the firms associated with Air Equipment, thus helping to eliminate peaks and valleys in work loads.

No Agreement on Short-Range Navigation System

Failure of the Air Navigation Development Board's Vortac Committee to agree unanimously on a future common short-range navigation system has pointed up the need for further study of certain aspects of the situation, according to ANDB chairman Donald A. Quarles.

The studies, he said, have already been initiated and the board will meet at the earliest practicable time to consider the results and finalize its decision. At deadline a tentative meeting date had been set for Jan. 28.



ACCENT ON MISSILES: Portable launcher of the Nevy-Chance Vought Regulus is plainly seen in this dramatic shot of the missile roaring off the flight deck of the carrier Hancock. Jato bottles drop off after propellant burns out.

Big Budget Request for CAA But Airport Funds Hit New Low

By JOSEPH S. MURPHY and LOIS C. PHILMUS

THE PRESIDENT's request for a \$159,340,000 appropriation for the Civil Aeronautics Administration in fiscal 1956 marks the end of two lean years for the agency. It is the highest CAA budget request made by the Eisenhower Administration (\$138.6 million enacted for fiscal '54 and \$129.2 for '55). It falls only \$3 million short of the last Truman Administration budget of \$162 million in fiscal 1952 and \$19 million below CAA's highest appropriation of \$178 million in 1951.

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The 1956 budget places heaviest emphasis on federal airways, with more than 75% of the money earmarked for airways uses. Highlight is a \$23 million request for modernization and improvement of federal airways and for radar traffic control equipment, a 360% jump over the \$5 million appropriated in 1955. Only in fiscal 1950, when CAA launched its VOR airways implementation program with an appropriation of \$45 million, has a higher figure been voted for new facilities. In addition, \$90,461,000 is sought for operation and regulation of federal airways and \$7 million is asked for liquidation of past contract authorizations.

In sharp contrast, the \$11 million asked for federal aid to airports hits a new low. The only time Congress was asked to consider a figure anywhere near this low was in fiscal 1953 when the Senate committee tried to get \$12.5 million through as a "token" to insure that the program was kept alive while it was under study. It was rejected by both houses, mainly on the grounds that it was too low to be of any use at all.

Funds for running CAA's safety and airport activities remain about the same as this year. Safety appropriations

of \$12,937,000 have been requested compared to \$12,766,000 this year; airport administration funds are up to \$2,752,000 in the new request compared to \$2,564,000 this year.

The new emphasis (and lack of emphasis) was stressed in the President's budget message. Referring to the growth of civil and military air traffic and congestion on the airways, "at times restricting aircraft operations in areas of heavy traffic," the President said:

"As a step to maintain high standards of safety and increase regularity of flights, I am recommending increased appropriations . . . for expansion and improvement of air navigation facilities and for more radar traffic control equipment."

On federal aid he stated, "We have made shifts in federal aviation programs during the past two years in order to reduce assistance no longer required and to concentrate on those federal aids which are indispensable to the continued rapid progress of aviation."

Continued Mr. Eisenhower, "With the increasing maturity of civil aviation, the federal government soon should be able to reduce substantially its safety promotion and enforcement activities. . . . I have requested the early preparation of a plan in cooperation with industry, to achieve this objective."

CAA Administrator Fred B. Lee, in an interview with AMERICAN AVIATION, had not yet heard of the plan to decrease enforcement activities, but felt the statement referred to the continuing program to turn certain responsibilities back to industry.

•Airways—Although the President's budget refers only generally to



FRED B. LEE

A continuing program to turn responsibilities back to industry

a planned expansion in the use of radar for traffic control, some major changes in past methods of operating the airways and controlling traffic reportedly are behind the large Commerce appropriation.

Speculation is that CAA has agreed to go along with certain key recommendations of the Commerce-sponsored management study made last year by Cresap, McCormick and Paget to gain support of its \$23 million facilities request. Suggested by the consulting firm and now under consideration by the Air Coordinating Committee's NAV Panel is a plan for conversion of many control towers for all approach control facilities and establishment of low-altitude control between adjacent areas they serve.

Another recommendation would alter the present concept of air route traffic control centers by combining facilities for control of flights at intermediate altitudes. Express control facilities would be established for highaltitude flights.

Other new facilities planned by CAA for fiscal '56 extend its implementation of the original "common system" program set up by Radio Technical Commission for Aeronautics SC-31. They include:

*Distance Measuring Equipment—55 new sites will be added. Airways operation and regulation budget also presumably provides funds for operation of 447 DME units CAA expects to have installed by June 30 of this year.

*Secondary Radar—This makes its first appearance in CAA's budget, with 49 operational and three non-operational installations programed. At an estimated \$100,000 per site for equipment and installation, they represent better than 20% of the new facilities budget.

*VHF Omnirange—23 new loca-

•VHF Omnirange—23 new locations are planned in addition to the 423 CAA expects to install by June 30 of this year.

Direction Finders-Four new

Five Year Plan: Extend Airways to Include Runways?

Evolutionary processes may see the end of the separation of the Federal airways from operational areas of the airports, possibly by 1960, based on the following observations:

the following observations:

1. Growing complexities of air traffic control will probably bring about some consolidation of air traffic control centers and towers in fiscal 1956.

Runways, particularly instruments runways, are no more or less than extensions of the federal airways system. Thresholds and ends of runways with ILS installations are under airways control.

runways with ILS installations are under airways control.

3. Airways control, which now stops at the runway's threshold, will of necessity have to be extended to the end of the plane's run and to the taxi turnoff with increased use of radar and other electronic aids.

4. Difficulties in getting Congress to meet the \$500 million obligation for aid to airports contained in the Federal Airport Act might be overcome by applying for one large airways appropriation (as in the '56 budget) which would include expenditures for runways, appeach zones, and runway lighting.





NEWEST AF RECON PLANE is the Republic RF-84F Thunderflash, a better-than-650-mph, long-nosed version of the F-84F Thunderstreak. Shown with its symbol-twin at right, the RF-84F (top) has air intake ducts located in wing roots to permit cameras, radar, and electronic devices to be located in front and sides of nose.

units proposed in fiscal '56 will bring the total to 46 on June 30, 1956.

Although not explained in the new budget, two major CAA airways programs expected to get into full swing in 1956 cell for:

in 1956 call for:

*Long Range Radar—Although plan is to use military long-range equipment for joint civil-military use whereever possible (one such installation is underway in New York area), CAA is expected to procure a number of military-developed radars under its own budget. Likely locations are Chicago, Los Angeles-San Francisco area, and possibly Dallas-Fort Worth.

•Peripheral Communications — Should get increased attention under the new budget. With expanded system at New York nearing completion, areas such as Washington, D. C. and Chicago more than likely will be next.

• Airports—Even the pessimists on Federal airport aid were counting on the barest minimum request—'55's \$22 million—even though authoritative sources indicated a request for \$33 million had been forwarded to the Bureau of the Budget. The President's request for only \$11 million came as a distinct shock. The territories are asked to divide \$350,000 (\$100,000 each for Puerto Rico, Hawaii, and Alaska and \$50,000 for the Virgin Islands). This leaves \$10,650,000 for state allocation, plus the 25% discretionary fund.

The woes of airport executives do not end there. Officials have told AMERICAN AVIATION that legislation to raise the discretionary fund to 50% (by cutting into state allocations) will be reintroduced this session of Congress.

A week before the budget was released Lee stated that while the 30 based planes and/or 300 passenger criteria would be maintained, there was a possibility that control towers and other structures occupied rent-free by federal agencies would be added to the list of eligible items.

Recent CAA estimates of national airport projects hit about \$100 million. The estimate was based on requests submitted by sponsors for developing the National Airport Plan. Whether all projects meet the criteria has not been determined, but officials assume that most do. The plan is classified until Congress has a chance to look it over.

The President has made a request, however, for \$7.5 million for liquidation of contract authorization on past federal aid projects. This item had been left out of the current budget.

• Administration — The largest single appropriation request of \$106,-150,000 comes under the heading of Operation and Regulation. It is a new category which encompasses the old salary and expenses classification and includes appropriations for the Technical Development & Evaluation Center.

If Congress accepts this form, it will provide the Administrator with greater flexibility in expenditures. Under present budgeting, he is highly restricted in transferring funds from one category to another.

Although confirmation was not available, unofficial reports claim that a Deputy Administrator will be named in fiscal '56 (if not before) and funds for the office are in the budget.

PROPOSED CAA BUDGET-FISCAL 1956

CIVIL AERONAUTICS ADMINISTRATION:	NEW AUTHORIZATIONS			EXPENDITURES from prior year and new authorizations		
Account Title	1954 enacted	1955 estimate	1956 estimate	1954 actual	1955 estimate	1956 estimate
Operation and regulation	7,000,000	5,000,000	106,150,000 23,000,000		11,015,000	96,275,000 8,000,000
dation of contract authorization)			7,000,000	601,628		7,000,00
Grants-in-aid for airports			11,000,000			12,000,00
Federal-aid airport program, Federal Airport Act (liquidation of contract authorization)			7,500,000	17,266,308	5,433,692	7,500,00
Maintenance and operation, Washington Na-	1 250 000	1.350.000	1 415 000	1 041 000	1.356,000	1,400.00
tional Airport Construction, Washington National Airport	1,350,000 400,000		1,415,000 525,000	1,341,276	628,000	525.00
Maintenance and operation of public airports.	400,000	010,000	020,000	00,200	020,000	000,00
Territory of Alaska	500,000	600,000	750,000	474,371	577,000	715,00
Air navigation development	1,085,000	1,050,000	2,000,000	1,045,741	938,000	1,570,00
tract authorization)				22,062		
Salaries and expenses	104,778,000			101,074,189	98,863,000	
Technical development and evaluation	750,000			792,873	739,000	50,00
Federal-aid airport program, Federal Airport Act				1,807,671		
Claims, Federal Airport Act		69,449		428,833	316,000	
Land acquisition, additional Washington airport Miscellaneous: Construction of public airports.	37,093	16,297	***********	38,059	15,234	
Territory of Alaska				996,941	140,319	
Total, Civil Aeronautics Administration	138,600,093	129,205,746	159,340,000	137,401,566	130,439,245	144,250,00



NEW BILLS IN THE NEW CONGRESS

A LTHOUGH the 84th Congress spent the better part of January in orposals began almost immediately. Of the first 2000 bills and resolutions introduced nearly 30 directly pertained to aviation.

The initial influx of aviation bills was primarily heavy on the civil side and ranged from the re-introduction of legislation that would grant permanent certification to local service airlines to a demand for a thorough investigation of the Civil Aeronautics Board.

Most ambitious proposal was made by Sen. Bricker (R.-O.), who presented a bill consisting of 50 amendments to the Civil Aeronautics Act, all of which were outgrowths of the extensive hearings held last year on the late Senator McCarran's omnibus aviation bill (S. 2647, 83d Cong.).

Included in the Bricker amendments are provisions that non-scheduled airlines be certificated by CAB within one year or go out of business and for permanent certificates for local service airlines.

Aviation bills to date by number and subject matter and their authors

are as re	niows.
н. п. 232	An exemption for agricultural cooperative shippers from Civil Aeronautics Act
H. R. 295	
н. п. 319	
н. к. 353	
H. R. 438	
H. R. 439	
H. R. 447	Priorities for awarding military procurement contracts in economic distress areas
H. R. 451	Require preparation of passenger lists on all commercial air flights
H. R. 525	
H. R. 526	Require permanent certificates for local service airlines upon application within 120 days
H. R. 527	Require CAB to exercise divisional rate-making authority in determining mail pay or subsidy
H. R. 845	Reduce tax rate on transportation of property Rep. Scudder (R-Calif.)
H. R. 1574	Repeal excise tax on transportation of personsRep. Hyde (R-Md.)
H. R. 1634	Respect to procurement of military supplies from small business concerns
H. R. 2004	To extend the Renegotiation Act for one year Rep. Carrigg (R-Pa.)
H. R. 2008	A Washington, D. C. heliport for service to and from Baltimore's Friendship International Airport
H. R. 2012	A mandatory requirement that State authorities spend grants-in-aid allocated under Airport Act
H. R. 2017	Permit air carriers to offer free or reduced rate carriage to the clergy
H. R. 2179	Program to train 25,000 engineer and scientists annually at expense of \$50 million to government
H. R. 2255	Require permanent certificates for local service airlines on application within 120 days
H. R. 2226	U. S. aviation symbol for display on aircraft and at airfields signifying U. Sdeveloped airplane
H. Res. 18	Create a special five-man committee to investigate the Civil Aeronautics Board
H. Res. 60	Create a select committee to investigate and study subsidies paid by federal government
	Placing limitation of 1000 feet on radio and television towers, maintaining control of low level, air space
H,J.Res.13	Placing limitation of 1000 feet on radio and television towers, maintaining control of low level air space
S. 308	A comprehensive civil aviation bill consisting of 50 amendments to 1938 Act and related statutes
S. 335	A Washington, D. C. heliport for service to and from Baltimore's Friendship International AirportSen. Butler (R-Md.)
S. Res. 13	Authority to extend investigations into transportation and communica- tions fields by the Senate Interstate and Foreign Commerce Committee, with expenses of \$200,000Sen. Magnuson (D-Wash.)
S. Res. 16	To give "standing" status to the Select Committee on Small Business
S. 381	Making capital more readily available for financing small business in order to foster, develop, and promote commerceSen. Sparkman (D-Ala.)
8. 382	To continue the Small Business Administration which otherwise is to be terminated on June 30, 1955
S. 383	Making credit more readily available for financing small business in order to foster, develop, and promote commerceSen. Sparkman (D-Ala.)
S. 400	To encourage and assist the production of strategic and critical materials, metals and mineralsSen. Malone (R-Nev.)

PROCUREMENT NOTES

• The new Comptroller General, Joseph Campbell, in the annual report to Congress prepared by his assistant, Frank H. Weitzel, continues criticism of "administrative abuse" of Defense procurement, suggests stronger legislation, and points out "the desirability of reducing the high percentage of negotiated contracts in favor of awarding contracts to the lowest bidder."

• In the review of military contracting procedures criticism is made of redetermination delays and other "weak and extravagant procurement practices."

• The Hoover Commission is completing a number of reports to go to Congress within the next 60 days. Of interest to military contracts are those pertaining to excessive paperwork, military procurement, and offshore procurement, which are being prepared by special working groups composed of management and fiscal experts from industry.

The offshore procurement report will be the most sensational. It will criticise the whole overseas purchasing policy and will point out how American aid has been diverted to aid British

commercial aviation.

• The 26-page special report on procurement activities sent to Defense Secretary Wilson by his Business Advisory Committee on Organization and Procedures (the Cooper Committee) has served as a guide in many top-level business decisions in the Pentagon. This briefed report supplanted a 400-page survey prepared by a working group of 35 experts from industry under the direction of Robert Gross, president of Lockheed.

• Although Mr. Gross' report was not accepted by the full committee (because some recommendations did not tie in with the overall policy recommendations of the other 18 special reports), parts are being freely used by fiscal officials to aid them in forming new procedures and policies.

• High procurement officials asked Assistant Secretary Pike (Supply and Logistics) before he left on a two-month tour of Europe to approve for industry consideration the latest draft of the controversial cost allowance principles (Section XV, ASPR) although the services have not agreed on the cost items of depreciation, profit sharing plans for stock bonuses and retirement, and incentive benefits.

• These new proposed regulations have been under discussion at the Pentagon for nearly three years. At least 10 "final" drafts have been written. Being somewhat more liberal than the present Section XV rules, it has been awaited by industry.

How To Cut Losses Due To Obsolescence

BY LOIS C. PHILMUS

WHAT TO DO about obsolescent parts and accessories is of increasing concern to aircraft parts and equipment distributors. Hundreds of thousands of dollars worth of parts and accessories gather dust every year on distributors' shelves for lack of sale or a means to return them to the manufacturer.

Although not new, the problem has become more acute in recent years for two reasons:

 Acceleration in development of new equipment and refinement to existing designs.

• Increased demand brought about by the growing use of non-carrier aircraft. Technical products are of most concern.

At the recent Aviation Distributors and Manufacturers Association meeting in Washington and in subsequent meetings with individual distributors and manufacturers, AMERICAN AVIATION has found basic agreement between the two on the need for closer liaison.

AMERICAN AVIATION learned, for example, that distributors would like to be taken into manufacturers' confidence to the extent that distributors would receive notification well in advance of new equipment coming onto the market.

Said one distributor: "When a manufacturer knows a new piece of equipment is going to come out which will replace an item I stock, give me at least six months notice. I would have a chance to unload and cut down inventory of the item."

Three methods have been discussed by the ADMA members to assist in selling as much of the old as possible before a new product is put on the market:

• Publication of service bulletins by manufacturers for exclusive use of distributors. These would announce impending changes on stocked equipment and give advance warning to start moving the stock at once.

• Immediate recall of parts or items which are reaching obsolescence through engineering changes or which are no longer suitable for its intended use. If the distributor is prompt in returning the item, he would sustain no financial loss.

Sales assistance from the manufacturer to the extent that if a product is reaching obsolescence the manufacturer would be responsible for recalling surplus stocks from distributors and forwarding them to different areas where customer demand still exists.

The value of manufacturers representatives to call on distributors periodically is stressed by distributors, who feel manufacturers need clearer pictures of local conditions. This would be reflected in more equitable and individualized minimum stock requirements which are set forth in manufacturer's contracts with the distributor. Manufacturers' representatives, it is felt, should make some calls on customers with distributor salesmen.

At the same time, representatives could brief distributors on coming equipment and the sales picture generally since the manufacturer is in a better position to know of changes which could effect sales or result in overstocking.

On the same theme, manufacturers would like to see more visits to their plants by distributors. In doing this, distributors could schedule conferences with the sales and engineering departments and get to know more about the company and its products.

Obsolescence clauses in manufacturer-distributor contracts is a touchy subject. Some manufacturers agree to them. A few give a 5% allowance on the distributor's surplus and obsolescent inventory on new stock orders. One manufacturer, reportedly, honors up to 3% of the surplus equipment value. It is generally believed, ADMA states, that some equitable rate might be arranged on resalable items.

R FOR OBSOLESCENCE

- Closer working liaison between manufacturers and distributors.
- Obsolescence clauses in contracts for distribution of parts and equipment.
- Early notification of changes in equipment or new designs.
- Recall of distributors' stock on parts which are defective or no longer suitable.
- Manufacturers' clearing house for nation-wide interchange of obsolescent parts.
- 6. Reappraisal of stocking minimums established by manufacturers.

Some distributors, on the other hand, have set up a reserve of one-half of 1% of net sales to cover themselves on losses from obsolescent and surplus products.

Two factors contribute to the growing need for allowances on outdated equipment, one distributor states:

- Manufacturers must make some allowance on products when design advances have been made.
- Distributors must be protected from overestimating sales in their territories. They must have products to sell off the shelves to meet growing competition and customer demand.

Most desirable method for allowances, one distributor pointed out, would be to establish uniform percentages on each type of product handled. He suggested that an attempt be made within ADMA to come to a membership agreement as a starter in formulating criteria.

The creation of "clearing houses" by manufacturers is another recommendation. It is envisioned as a con-



FIRST PLANE to carry a pilot aloft from a zero-length launcher is this Air Force F-84G Thunderjet. Air Force announced earlier this month that the launcher developed at Martin Aircraft may some day make front line airstrips obsolete. Principle is the same as that used for launching the Matador guided missile. Peak acceleration, with booster bottle assist, in 4g's, described by test pilot as easier than catapult take-offs.





NEW INLET GUIDE VANES allow more air to enter compressor of J47-GE-33 engine. New vanes have same configuration as those used on J47-GE-17, but pay off in increased thrust during dry and afterburner operation.



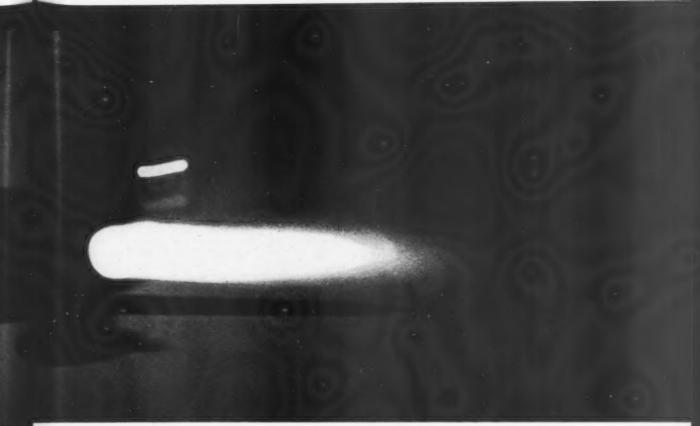
IMPROVED RELIABILITY in the J47-GE-33 engine is illustrated by the new "floating" shim shroud visible above. It reduces the possibility of shroud ring rub on turbine wheel buckets. G-E tech rep is pointing to new adjustable turbine baffle.



NEW, LARGER "EYELID" handles increased J47-GE-33 airflow. Just inside 'lid, a sturdy ceramic-coated liner acts as a radiation shield, allows higher afterburner fuel flow; also preserves boundary layer cooling of the tailpipe.



CAREFUL J47-GE-33 QUALITY CONTROL at G-E manufacturing plants is already paying dividends to the Air Force. For example, only one-out-of-four J47-GE-33's now require two tests before shipment to the USAF.



More "D" Sabre Jets are in use today than all other types of USAF interceptors combined.

Why the F-86D Sabre Jet Interceptor Now Climbs UPSTAIRS.... 20% FASTER!

New production model J47-GE-33 jet engine packs more thrust, also improves "D" reliability and ease-of-maintenance

For the past three years, North American Aviation's F-86D Sabre Jet has been the fastest interceptor in the Air Force's Air Defense Command (top speed: over 650 mph).

Today a new General Electric turbojet, the J47-GE-33, is being installed in "D" Sabres. The engine makes the "D" still faster . . . more reliable . . . easier to maintain.

The J47-GE-33 has the same basic design as its predecessor, the J47-GE-17. But these six improvements reduce its weight, increase its durability, and, most important, allow it to swallow more air and increase its afterburner power:

1. New inlet guide vanes

- 2. New capacitor discharge engine ignition system
- 3. New "floating" turbine wheel shim shroud
- 4. New Hotstreak afterburner ignition system
- 5. New ceramic inner-liner for afterburner
- 6. New larger variable area jet nozzle

The J47-GE-33 can peel 20% off the time originally required to "scramble" an F-86D from standing start to 45,000 feet.

By helping the Air Force reduce maintenance time and costs, as well as increase jet performance, the J47-GE-33 again illustrates the G-E slogan, "Progress is our most important product." Section 232-3, General Electric Co., Schenectady 5, N. Y.

Progress Is Our Most Important Product

GENERAL EBELECTRIC

tinuing process which would enable turnover of products for years to come. An example:

 An aircraft operator goes to his local distributor to purchase spares for an out-of-production engine.

• The local agency does not have the spare, but can contact the engine's manufacturer who has a nation-wide file of all surplus inventory. He can then locate the parts in another distributor's area.

• Net result: The local distributor provides service to his customer and the other distributor moves equipment listed as obsolescent.

To carry out such a system, distributor's inventory records must be complete, detailed, and accurate. Thus, manufacturers would have call on the records when needed, eliminating time-consuming searches by both parties.

Whatever the ultimate solution, it is felt that compromises and combinations of all proposals are necessary. It is generally conceded that obsolescence and surplus will always be with the industry. But it is definitely known that dollar losses can and must be reduced before they become insurmountable.

Dade County Fires Curry

A. B. Curry, director of the Dade County (Fla.) Port Authority since 1948, was fired earlier this month in a resolution passed by the authority commissioners. L. K. Thomson, acting director and formerly Curry's assistant, was named to the \$25,000-a-year post.

The suprise action followed dismissal of four larceny counts filed against Curry by the County Solicitor. Two counts were dismissed on writs of habeas corpus and the others for lack of evidence. Curry is technically cleared unless an appeal is filed by the solicitor.

Curry, ill for some time, had been on a six-month leave of absence which did not expire until March. The action was totally unexpected since a new grand jury is investigating the entire port authority, although reports had circulated that Curry would be let go after his leave ended and the investigation was concluded.

Wood Quits AVWEEK

Resignation of Robert H. Wood as editor of *Aviation Week* was announced last week by the magazine's publisher, Robert W. Martin, Jr. Confirmation of the move came on the heels of vigorous denials by the publisher, in which he described the report as "a complete and unmitigated lie."

Wood's successor will be Robert B. Hotz, executive editor since 1952. There has been no indication of Wood's future

plans.

West Coast Talk . . . By Fred S. Hunter

- Scientific ground-breaking is a fizzle
- Positively a commercial DC-8
- Uranium hunters are safety menace

YOU JUST CAN'T trust these scientists. The other day Lockheed's fast-growing Missile Systems Division broke ground for a \$4 million research laboratory building at Van Nuys. Naturally, in this nuclear age, this was not a job for an old-

fashioned shovel. This called for a scientific touch. Lockheed set up a project whereby a powder blast would be buried on the Van Nuys site and electronically triggered into an explosion from the company's missile test base at Almagordo, N. Mex.

A few days in advance of the event a dry

run was staged. It was a triumphant success. Black smoke shot up in a cloud—ideal for photographic purposes—and everybody from Pete Quesada to Eric Miller felt exceedingly happy about the whole thing. But Pete's scientific experts had to improve on their handiwork for the actual ceremony. A little more powder would, of course, make even more smoke for the photographers. So what happened? Do we have to tell you? No smoke.

WE ALWAYS get a kick out of the official statements Douglas feels impelled to issue from time to time because somebody starts off a new jet transport story. They invariably include a line like this: "It has always been a Douglas policy to build aircraft that can make money for its owners as well as headlines." Author of this sly propaganda is A. M. Rochlen, the Douglas company's widely known vice president of public relations and an artist at coming up with punch lines. No one in the business can put more box office into a simple phrase than Rocky.

PERSONNEL PROCURE-MENT men in the west San Fernando Valley are beginning to take on harried looks. Lockheed's Missile System Division, Marquardt Aircraft, and Radioplane, neighbors in Van Nuys, all are actively recruiting engineers for expanded missile programs—and you know how neighbors are. Now the social life in the valley is about to be enlivened by addition of another neighbor—North American's new facility to be erected at Canoga Park—which will be hiring engineers

for the same type of work. Should be a very gay season for the personnel people.

IF YOU are thinking of making Bob Prescott an offer for one or more of The Flying Tiger Line's three DC-6A's, set your sights high. So far, Prescott has resisted all tempta-

tion to sell or lease any of the new equipment despite no less than a dozen lucrative offers, He wants to keep the DC-6A's on the line this time to build up the carrier's freight traffic, and it will take a fat sum to get him to part with one.

OUT SANTA MONICA way, the betting is six, two, and even—as they say in the pool rooms—that when Douglas announces the DC-8 it will be a joint announcement with will be a joint announcement with airlines placing orders for the equipment. Remember how American, Panagra, and United joined in an announcement of the first DC-6 purchases? Might even be the same three carriers again. They'll also tell you—in Santa Monica, that is—that win, lose, or draw in the tanker competition, there'll positively be a commercial DC-8.

THE URANIUM fever is furrowing the brows of safety agents in
the CAA's 4th Region. Not over
their own speculations, if any, but
over the aerial prospecting that's going on in the western states by hundreds of pilots with varying degrees
of experience. Its caused accident
rates to increase in districts (like
Grand Junction, Colo.) that are centers of uranium hunting activity.
Major problem concerns pilots who
go prospecting, but have little or no
knowledge of mountain flying.

A MILITARY COMMENTARY



By Harry S. Baer, Jr.

The Army's interest in fixed-wing aircraft extends to bigger planes-and maybe jets

THE ARMY'S interest in helicopters is well known. THE ARMY'S interest in nencopeers and more Army of which the following are getting more and more Army attention:

• Jet aircraft—the Cessna T-37 in particular, which the Air Force is now ordering as a trainer.

*Larger single-engine planes-the de Havilland DHC-3 Otter, reported to have been ordered in quantity.

• Twin-engine executive aircraft—perhaps more Beech L-23's, but not in the immediate future.

The Army hasn't ordered any T-37's yet. But if it does this would be a big step for this service. Up to now not much thought has been given to the Army piloting turbojet aircraft.

But increased interest in the de Havilland Otter, which has an empty weight of 4165 pounds, points toward a greater desire by the Army

for bigger planes.

The memorandum of undertanding, now more than two years old, is not for perpetuity. It can be revised, though probably not with-out a hassle. For example, the memorandum says on the weight question: "The weight limitation on Army fixed-wing aircraft will be subject to review by the Secretary of Defense upon request by the Secretary of the Army or the Secretary of the Air Force as required to keep this limitation realistic in the light of technical developments and assigned missions."

Army officials usually are very cautious about discussing larger or twin-engine planes. They want to avoid accusations of seeking to build another air force or of duplicating operations of the Air Force. Army

command and staff air transportation, particularly with multi-engine planes, has been criticized.

But such criticism, the Army feels, is unjustified because of the pains it takes to keep its air operation on the up-and-up. Army uses its planes on a businesslike basis, like a commercial company uses an executive aircraft.

With some 3000 aircraft, about half of which are fixed-wing types, the Army has learned the value of air movement on its own to its installations in the boondocks where no other aircraft fly. With less manpower, the Army says its officers' time has become more valuable. And officers have more time to put to constructive use if they can get to their destination by air.

As one officer put it, "If we fight communism. we will have to rely more and more on aircraft to achieve speed of mobility. As long as you have limited manpower (and the Army's is becoming more and more limited), you need such mobility to increase efficiency."

Speed could be a valuable asset in tactical operations, reconnaissance over the enemy area. But initial use of fixed-wing jets (the Army has a turbine-powered helicopter, the Sikorsky XH-37) may pose some problems, such as training and maintenance which would of necessity have to be on a relatively small scale.

As for the de Havilland DHC-3 (Army designa-

tion, C-137), the Army has six of these single-engine monoplanes, which can carry as many as 14 passengers.

Negotiations are now in progress with the Canadian manufacturer. de Havilland Aircraft Co. at Toronto, for 84 more Otters at a reported \$10,000,000.

Army's twin-engine program is temporarily dormant, With an order for 99 L-23's completed last spring, officials feel the current inventory is adequate. Also on hand are three twin-engine L-26 Aero Commanders, purchased for evalua-

tion purposes.

Requirement for additional twin-engine types may depend on the life factor of the L-23. If the Army would decide to up its twinengine aircraft inventory, however, the L-23 or an advanced version of it probably would be ordered. Army experience with maintenance of these command and staff aircraft has been such that any new type would have to offer extreme advantages over the L-23 before it would be ordered.



DE HAVILLAND OTTER



CESSNA T-37

What about an Army requirement for a fourengine aircraft, such as the Cessna 620 executive type? Although it could offer some advantages in Army aviation, there is no specific requirement now for such an aircraft.

One of the principal reasons for this, of course, is weight. A memorandum of understanding, sometimes referred to as a "memorandum of misunderstanding," between Army and Air Force stipulates that Army fixed-wing aircraft may not exceed an empty weight of 5000 pounds. Apparently not desiring to have another go-around with the Air Force on this business, the Army seems content at the moment with fixed-wing aircraft under that limit.



BELL 47H: The company has made streamlining a major selling point.

Helicopters Can Be Streamlined Too

A CLEAN-UP campaign to reduce helicopter drag is drawing increased attention from the industry as new powerplants foreshadow higher speeds and longer ranges. Recent contributions to the problem have come from Bell Aircraft, which has made streamlining a major selling point on its Models 47G-1 and 47H, and from the National Advisory Committee for Aeronautics, which has released a survey of the subject titled "Reduction of Helicopter Parasite Drag."

Up until now rotary-wing designers have been busy enough getting their machines in the air and keeping them there, declares Hans Weichsel, sales engineering supervisor for Bell. Streamlining has received scant attention. As a result, the flat-plate area of a typical two-place helicopter is 15 square feet, or three times that of a small two-place airplane.

NACA estimates that for a typical

10,000-lb. helicopter the equivalent parasite drag area is 40 square feet. When both are traveling at the same speed, a modern transport has only half the drag of a small helicopter.

What can be accomplished is demonstrated in Bell's new Model 47's. With negligible weight penalty, cruise speed at a given power setting is increased 20%, rate of climb is up 10%, range is up 20% for the same payload, and payload is up 15% for the same range.

Maintenance may also benefit since it is proportional to flying time, which can be reduced by higher cruising speed. If cruising speed is held constant, the new design will permit operation at a lower percentage of rated power, in itself a maintenance advantage.

A 50% reduction in parasite drag is set as a reasonable expectation by NACA. If this is accomplished and the

NEW TRANSPORTS UNDERGO CAA FLIGHT TESTING

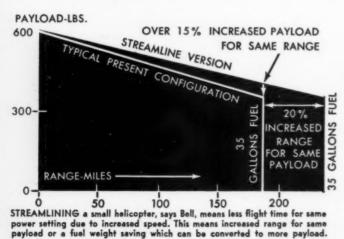
CAA certification flight testing on two new transports—Lockheed's 1049G Super Constellation and Douglas DC-7B—is now under way. Both aircraft will have Wright Aeronautical Turbo Compound engines (DA-3 on 1049G, DA-4 on the DC-7B) with a 100 hp increase in METO power.

equivalent flat-plate area for the hypothetical 10,000-lb. helicopter is reduced to 20 square feet, then top speed would be increased by 19 mph, speed for best range would be increased by 11 mph, and range itself would be increased 25%. Reduction in power required at various speeds is shown in the NACA graph.

One design change—retracting the landing gear—would result in drag savings of 80%. If this is impractical, significant savings would still result from properly fairing the wheels and struts. Other savings could be effected through redesign of rotor hub, exhaust stacks, cooling air duct systems, and leakage of air through gaps in the fuselage structure.

Losses in the cooling air system reflect the case where cooling air for a piston engine loses full free-stream dynamic pressure in the inlet. If the cooling system were designed so that the free-stream dynamic pressure was recovered, this source of drag would be eliminated. Cooling air should also leave the fuselage smoothly, parallel to the external flow.

Savings achieved will be partially offset by increases in weight. Whether the net reduction in drag is worth the effort will depend upon the particular rotorcraft's performance and application, but the trend toward faster, cleaner helicopters seems to be under way.



O 50 100 150
POWER SAVING: In typical 10,000-lb. helicopter, drag area is 40 sq. ft. (top line). NACA says a 50% reduction would bring results in bottom line.

VELOCITY, MPH

40 SQ.

POWER REQUIRED (HP)

700

600

500

400

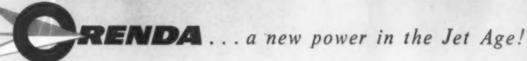
300

200

100

20 SQ. FT





Orenda Engines begins its corporate life with an established record of engineering and production achievement, with management and policies unchanged and with the same goal . . . leadership in the field of aerial propulsion.

From Orenda's design, development and production departments came the first all-Canadian jet engine to power the CF-100 and F-86 Sabres V and VI. Since September, 1952, the company has delivered over 1,500 Orendas. Expanded research facilities are now under construction to deal with the increasingly complex power requirements of the future.

The 6,000 people in the Orenda family are dedicated to designing, manufacturing, maintaining and servicing modern jet engines and other forms of aero power and to the building of a sound aircraft industry for the defence and development of Canada.

*ORENDA: Source of all power-Iroquois



MALTON

for a growing Cosmo

STEEL FORGINGS

small and medium size steel and high temperature alloy precision forgings

LABORATORY

ALUMINUM FORGINGS

small & medium size aluminum precision forgings in high strength alloys INSPECTION AND CONTROL

DIE SHOP

ADMINISTRATION

ENGINEERING

ALUMINUM SAND CASTINGS

ALUMINUM PERMANENT MOULD CASTINGS MAGNESIUM PERMANENT MOULD CASTINGS ALUMINUM FORGINGS

large precision forgings in high strength aluminum alloys

PATTERN SHOP

ALUMINUM PRESSURE DIE



MADIAN STEEL IMPROVEMENT CONTINED

ECOND AVENUES, ETOBICOKE, ONTAKIO

WEMBER COMPANY A VIROF CANADA HAND

Anhouncing | the formation of a new Group in world aviation

AVRO AIRCRAFT LIMITED
ORENDA ENGINES LIMITED
CANADIAN STEEL
IMPROVEMENT LIMITED

MEMBER COMPANIES:

A.V. ROE CANADA LIMITED MALTON ONTARIO

ENGINEERS NEEDED! Aeronautical, mechanical and electronic engineers are needed by both AVRO Aircraft and ORENDA Engines to help meet the increased demands of the Jet Age. Your training and skills can assure you of a highly paid, scure future with Canada's expanding aeronautical leaders. Write to Personnel Manager of either company, Matton.

Take Off FOR AVRO AIRCRAFT

A world-famous name sharing a heritage of 46 years of flight takes off on its new career. With its own established record of design and production achievements reflected in the constant output of CF-100's for the R.C.A.F., AVRO Aircraft assumes an independent and experienced role in world aviation.

Already successfully test-flown for nine years, the new Company will direct the efforts of 10,000 experienced designers, engineers, technicians and skilled production workers. Assurance that

AVRO Aircraft can meet the increasing demands of the Jet Age is confirmed by the proven development record of its extensive engineering staff, every member of which is constantly at work on aeronautical research and design for the future.

With management and policy unchanged, AVRO Aircraft continues to discharge its responsibility as one of the main industrial arms of the R.C.A.F. and through present and future projects reinforce and maintain Canada's air defence.



AVRO AIRCRAFT

DEDICATED TO CANADA'S JETPOWERED LEADER.

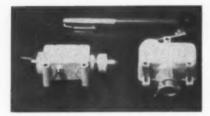
HE AIR

New Products and Processes

Lightweight Switch

A hermetically sealed single-pole switch for landing gear or bomb-bay door installation which occupies only two-thirds the volume of the type previously used has been developed by the Electro-Snap Switch Manufacturing Co.

The new model (at left in photo) is designed for an operating force of 20 lbs, compared to the previous figure of four lbs, thus providing an ice-breaking reset force of between 11 and 20 lbs.



Design was developed at the request of Douglas Aircraft Co., which specified a smaller, lighter switch with higher operating force. Model used in such applications in the past weighed seven oz.; the new one, designated the HS-20, weighs only 5½ oz.

Deliveries to Douglas have begun for use on cargo doors and in other applications where a single-pole switch is suitable. In one cargo-door application, 26 of the switches are connected in series, to indicate when the door is completely closed and pressurization is completed. A modified, two-pole version is under development for Republic Aviation Corp.

Pre-travel is limited to 2½°, while over-travel is extended to 18°, allowing considerable leeway in estimating the point at which switch motion will be completed.

Circle No. 50 on Reader Service Card.

Liquid Level Switch

A versatile new liquid level switch developed by Minneapolis-Honeywell Regulator Co.'s Aeronautical Div. is serving a multi-purpose role in helicopters, aircraft, and missiles. It sequences



the fuel flow to maintain constant cg in high thrust missiles, automatically closes refueling valves in the B-47 bomber, and provides low-level fuel warning in the Martin B-57D, Cessna 620 executive transport, and Sikorsky S-56 helicopter.

Key to its operation is a small negative temperature coefficient resistor, called a thermister, that detects the presence or absence of liquid according to its minute temperature changes. A small current is passed through the thermister causing a temperature rise above that of its environment. By detecting and utilizing the varying temperature rise and higher resistance experienced in air, fuel and other fluids, it is possible to indicate when the thermister changes from one environment to another such as the depletion of fuel from a tank.

According to M-H, available thermisters in bead, disc, washer, rod, flake, and printed patterns are adapted to use in aircraft oil, water, hydraulic, alcohol, ADI, and de-icing systems.

Circle No. 51 on Reader Service Card.

Explosion Suppressor

A new aircraft explosion suppressor system that will react before an incendiary bullet is half way through the wing of a jet fighter has been developed jointly by Electronics Corp. of America, Fireye Div., and Republic Aviation Corp. Success achieved with the system by the two companies working under U.S. Air Force stonsorship has been such that



plans are reportedly under way for production installation in military aircraft.

Heart of the new suppressor is a minature photoconductive cell detector developed by ECA that will change its resistance with extraordinary rapidity in the presence of infrared radiation. It is coupled to a small plastic container of fire extinguisher fluid having a small detonator cap, with all three elements weighing about three-quarters of a pound.

On a combat aircraft, company officials say, the device is designed to react before an incendiary bullet travelling at 3000 feet per second is halfway through the wing. By this time the change in resistance of the detector will electronically trigger the detonator and spread the extinguishing agent throughout the fuel tank at the rate of 300 feet per second.

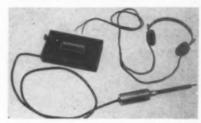
Tests by Republic showed that the

system performs with such speed that fuel cell explosion could be adequately suppressed. These tests were not limited to laboratory work, but instead involved simulated battle conditions in which incendiary ammunition was actually fired into an aircraft.

Circle No. 52 on Reader Service Card.

Sound Probe

A new electronic sound probe marketed by The Gel-Me Co. to locate trouble in mechanical equipment is available from the Gel-Me Co. The



instrument translates vibration into electrical energy, multiplies the sound volume, then transmits the result into earphones worn by the operator. Literature available.

Circle No. 53 on Reader Service Card.

Flexible Coating

A new flexible coating called Micro Lite ML88, originally developed by North American Aviation, Inc. as a rain erosion resistant agent, is being marketed by Radar Relay, Inc. for a variety of applications. It cures at room temperature, can be applied by brush, spray, or dip, and reportedly has a dielectric strength of 1000 watts per mil.

Proposed uses include protection of battery terminals, encapsulating resistors, transformer windings, and relay coils, ML-88 does not crack or break under flexing at -65°F and a fully cured film can be intermittently subjected to 400°F.

Circle No. 54 on Reader Service Card

Check Valve

The Model U-513585 water alcohol drain check valve developed by United Aircraft Products, Inc. consists of only two moving parts and requires no disassembly for seal replacement.

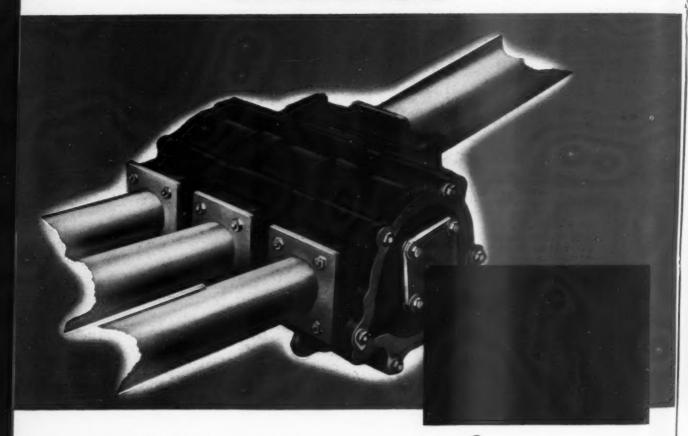


Although originally designed to check water alcohol leakage at engine shut-down, the UAP unit serves the dual role of relief and check valve. When the water alcohol pressure reaches

NOW-**MECHANICAL FUEL PROPORTIONERS**

Produced by

STRATOS



Stratos Fuel Flow Proportioners* offer aircraft fuel systems designers a simple, mechanical method of fuel flow proportioning. Essentially multi-sectioned positive displacement metering devices, the Stratos Fuel Proportioners can be produced in any desired ratios. Basic applications are:

C. G. CONTROL: Accurate proportioning of flow from two or more tanks maintains longitudinal and transverse stability without pilot attention.

SINGLE POINT REFUELING: Useful for in-flight or ground refueling. Proportioners distribute fuel in proper ratio to any number of tanks, maintaining trim at all times, whether or not tanks are topped.

FUEL SYSTEM SIMPLIFICATION: Cuts down on valving and plumbing-lowers system weight.

INCREASED OPERATIONAL RELIABILITY: Acts as booster pump in event of fuel tank booster pump failure.



DIVISION OF FAIRCHILD ENGINE & AIRPLANE CORP.

Main Office: Bay Shore, L. I., N. Y. . West Coast Office: 1355 Westwood Blvd., Los Angeles, Calif.

a pre-determined setting, the relief valve opens and allows flow from the inlet to outlet port. At the same time, the valve closes the outlet to the overboard drain system.

The new valve operates in ambient conditions from —65°F to 800°F and is rated for 2000 lbs. per hour flow with 400 psi inlet pressure.

Circle No. 55 on Reader Service Card.

Ejection Seat

SACseat, a new upward ejection seat developed by Convair-Fort Worth, is designed to give the crewman 30% more hip room than conventional types. Actual hip spacing is 22" and arm rests are 19" apart.

The new Convair seat meets mili-



tary structural requirements and can be adapted to all methods of take-off—conventional, catapult, or vertical. Features include a full-width telescoping leg guard that extends downward to prevent injury to occupant's legs upon ejection; also, stirrups are eliminated as a possible cause of leg, ankle and foot injuries.

Circle No. 56 on Reader Service Card.

Anchor Nut

A new self-flaring anchor nut annunced by Elastic Stop Nut Corp. of America is especially designed for "wet wing" aircraft fuel tank installations. It provides a seal against leakage up to 50 psi on either side of the sealing element.



Already U.S. Air Force approved, the ESNA nut is enclosed by a one-piece aluminum cap with a sealing ring in the base. The nut body is designed with a floating action of 0.025" in all directions for ease of assembly. Weight is 1.2 lbs. per 100.

Circle No. 57 on Reader Service Card.

Selenium Rectifiers

Series of hermetically sealed, high voltage selenium rectifiers for airborne equipment now being marketed by International Rectifier Corp. are designed for



applications involving adverse atmospheric conditions and severe vibration.

Unit shown is model U100HM with a maximum a-c input of 3000 volts RMS and output rating of 1420 volts d-c, and 1.5 ma d-c current at 35°C ambient into a resistive load. It measures 5½" overall with an outside diameter of 5/16".

Circle No. 58 on Reader Service Card

Impulse Generator

Microloc Corp. has developed a new 2 lb. 12 oz. impulse generator that converts mechanical energy into pulses of electrical energy under operating temperatures varying from -100°F to 250°F. It serves as a standby source of power for emergency use of Pastushin Aviation Corp.'s new force ejection system for fuel tanks, bombs, or external stores.

A permanent, self-contained unit, the new generator requires no maintenance or adjustment. Dimensions of the Series B7000 unit are 5½"L, 2"W, and 3¾"H, but size as well as weight can be varied to meet a wide range of operating conditions.

Circle No. 59 on Reader Service Card.

Accelerometer



A new potentiometer-type accelerometer announced by Genisco, Inc. is available in ranges between ±lg and ±3g and can be stored at temperatures from —65°F to 180°F without damage or change in characteristics.

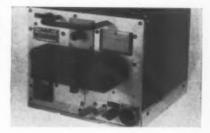
Feature of the Model GOH unit is an integral thermostatically controlled heater that permits operation within specification limits from —50°F to 160°F without a damping variation in excess of 0.1 critical. It can be operated at any altitude, however, the thermostatic feature is limited to 60,000 ft. and 95% relative humidity at 160°F. Weight is 38 oz.

Circle No. 60 on Reader Service Card.

Antenna Tuner

The model AAT type 4 automatic antenna tuner developed by Aeronautical Communications Equipment, Inc., weighs 16.5 lbs. and is said to meet all the essential requirements of Aeronautical Radio, Inc.'s Characteristic No. 525.

The Aerocom tuner operates over the frequency range of 2-22 megacycles. No information is required from the transmitter or selector switch, hence it can be used with any type HF transmitter having a 52 ohm coaxial output, nominal carrier power of 50 or 100 watts, and the necessary control for the tuner.



The AAT-4 automatically tunes all fixed wire antenna, ground or open, on all commercial aircraft from the DC-3 to Boeing Stratoruiser.

Circle No. 61 on Reader Service Card.

Rust Remover

Kelite Products, Inc. has introduced a new dry powder for removal of hard water scale, rust, and paint from ferrous metals. A concentration of 3 lbs. per gallon of water at 180-212°F removes rust in 30-40 min.

Kelite Process 235 uses no electrolytic current and the material is nonacid. It is considered safe on all ferrous metals, has a low rate of attack on copper, and has a deleterious effect on lead, zinc, and aluminum.

Circle No. 62 on Reader Service Card.

I-F Transformer

A new miniature I-F transformer produced by Levinthal Electronic Products for aircraft and missile installations is available for 262, 455 and 1525 kilocycles. Housed in 1\%" cubical cans,



the transformers features ability to withstand large amplitude vibration and shock.

Construction utilizes powdered carbonyl-iron cup cores completely imbedded in epoxy resin. Operating temperature range is from —50°C to 100°C.

Circle No. 63 on Reader Service Card.

Integrating Gyro

Smallest hermetically-sealed integrating gyro ever made is the claim of The Greenleaf Manufacturing Co. for its new Model HIG-3 unit which measures 1" in diameter and is slightly over 2" long.



An outgrowth of Air Force spon-sored research at Massachusetts Institute of Technology, the new gyro is now available in pre-production quantities. Expanded output is being planned for anticipated wide use of the gyro in aircraft fire control systems and missiles.

Circle No. 64 on Reader Service Card.

Sealed Relays

New continuous duty electronic relays developed by U.S. Relay Co. for guided missile use can withstand 10g



high frequency vibration at 500 cycles and operational shock loads of 50g's,

(eservations

Tel-O-Tronics

according to the manufacturer.

The new units are said to surpass military requirements for AN 3303-1 and AN 3304-1 types which specify vibration of 10g up to 55 cycles and operational shock of 25g. The new units will handle 5 ampere resistive contact loads compared with the AN requirement of 3 amperes.

Both relays are four-pole, double-throw types and hermetically sealed. AN 3303 weighs less than 0.5 lbs., AN 3304 0 225 lbs.

Circle No. 65 on Reader Service Card.

Antenna-Beacon Installation

New approved installation of the Aircraft Radio Corp. VOR-glideslope antenna and Grimes rotating beacon on the vertical fin of Aero Commander



aircraft is designed to reduce drag and withstand icing without damage to antenna or aircraft. Rework is being made by Reading Aviation Service, Inc. at a labor cost of approximately \$150.

Circle No. 66 on Reader Service Card.

Actuator

A new horizontal stabilizer drive unit introduced by Western Gear Works mounts both 110 volt-400 cycle a-c and 24 volt d-c motors for optional operation. With this arrangement, the precision built actuator provides three speeds for manual, autopilot and coarse control of stabilizer movement.

Circle No. 67 on Reader Service Card.

TECHNICAL LITERATURE

Useful literature, films, etc., on a variety of technical and engineering subjects . . . free unless otherwise noted.

VHF TRANSMITTER, Model 17L-4 360 channel VHF transmitter is described in detail in new 8-page brochure by Collins Radio Co. Circle No. 68 on Reader Service Card.

HANGAR DOORS. A 20-page 1955 catalog of aircraft hangar doors is available from International Steel Co.

Circle No. 69 on Reader Service Cord.

MATERIAL HANDLING. New 4-page bulletin discusses the Yale Zephyr 1000-pound capacity hand truck. The Yale & Towne Manufacturing Co.

Circle No. 70 on Reader Service Card.

PRECISION Gearing. "Geartronics" is the subject of a new 6-page folder describing the services of Technical Products Co., Inc. in the field of high-speed and high-temperature gear design.

Circle No. 71 on Reader Service Card.

HYDRAULIC PUMPS, Bulletin No. 504 gives technical details on Model 67W aircraft hydraulic pumps produced by New York Air Brake Co., Watertown Div.

Circle No. 72 on Render Service Cord.

PROTECTIVE CLOTHING. Aluminized asbestos clothing is illustrated by Industrial Safety Specialties Co. in new folder.

Circle No. 73 on Reader Service Card.

EXTRUDED PRODUCTS Teffon, Kel-F and Polyvinyl extruded film products designed by Century Engineers Inc. are described in new folder

Circle No. 74 on Reader Service Card.

GYRO DEVELOPMENT. New 12-page brochure illustrates facilities of Gyromechanisms, Inc. for design and production of gyroscopic products.

Circle No. 75 on Reader Service Card.

TITANIUM TUBING. Bulletin No. 43 available from Superior Tube Co. discusses applications and advantages of titanium tubing including production limitations.

Circle No. 76 on Reader Service Card.

REINFORCED PLASTICS. Use of Bakelite polyester resins is covered in new folder available from Bakelite Co., Div. of Union Carbide and Carbon Corp.

Circle No. 77 on Render Service Cord.

ELECTRONIC EQUIPMENT. Four engineering bulletins published by Trio Laboratories discuss its line of miniature vacuum tube voltmeters and auxiliary power supplies.

Circle No. 78 on Reader Service Cord.

MINIATURE MIKE. New leaflet gives details on the Model 100 miniature speaker-microphone produced by Telex, Inc.

Circle No. 79 on Reader Service Card.

HIGH SPEED COUNTER. Raycon Corp. announces new 3000-per-minute mechanical counter in Leaflet 550-1054.

Circle No. 80 on Render Service Card.

DEEP DRAWN CLOSURES. Moorlee Manufacturing Co. lists over 500 sizes of enclosures and covers in 38-page catalog.

Circle No. 81 on Reader Service Card.

How airports can easily provide has solved travelers with hotel information an airport problem!

Our electronic information board shows hotels, prices, and by means of direct wires, current reservations available at each hotel. A glance at the board tells the traveler immediately the hotel accommodation situation in the city he is visiting.

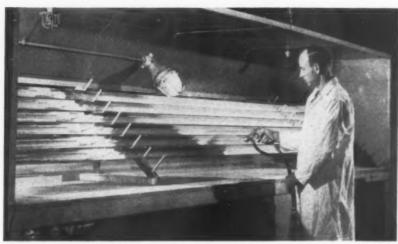
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Circle No. 18 on Reader Service Card.

Maintenance Bulletin Board



DEVELOPER is sprayed on dried parts to reveal flaws.

Northrop's New Dye-Penetrant Facility

Largest dye-penetrant type inspection facility in the U.S. has been placed in operation by Northrop Aircraft, Inc. for production-line inspection of F-89D Scorpion and XB-62 Snark missile components. It uses Dy-Chek, originally a Northrop development now marketed by Turco Products, Inc. under an exclusive license arrangement.

The complete Northrop installation occupies an area of 3750 sq. ft. It consists of large tanks to contain the process liquids, a drying oven, and spray booth. Parts are carried in large baskets by overhead crane and are dipped progressively into the dye penetrant, dye remover, and spray tank.

Next they are lowered into a drying oven after which they are removed from the baskets and transferred to racks in the spray booth for application of dye mark developer.

Tanks used by Northrop measure 16-ft. long by 4-ft. wide and are maintained at a 700-gallon level. As a



FLAW is indicated by scarlet "bleed" against white background (upper right).

safety feature (some liquids are inflammable), the tanks are fitted with a fuse link which automatically actuates the covers in event of fire, thereby restricting the flames to a single tank.

The complete process requires only two men on each shift—an inspector and dye process man. Although useable on both ferrous and non-ferrous metals, Northrop is currently applying it to non-ferrous materials, including aluminum and magnesium parts.

Capital Airlines "Makes Sure" with X-Ray Unit

Newest subscriber among airlines to the growing use of X-ray techniques for inspecting aircraft structures is Capital Airlines. Unit selected by CAP is the Norelco MG-160 produced by North American Phillips Co.

Capital's approach to X-ray use at present, says acting chief engineer Steve Wasuta, is as a time-saving "makesure" inspection tool, not as a routine means of inspecting for structural integrity. When a structural area becomes suspect, engineers specially trained on the equipment X-ray the location, and the results are viewed on a 14" x 17" negative produced by the MG-160.

New Aluminum Codes

A new four-digit system of designating aluminum alloys now in effect among aluminum companies replaces the old two-digit system and provides for unlimited designation of new alloys. Aluminum now coming out of the mills will be stamped with the new designa-

tion but the alloys remain unchanged. Conversion numbers are:

Old	New	Old	New
28	1100	52S	5052
3S	3003	56S	5056
148	2014	618	6061
17S	2017	63S	6063
A17S	2117	75S	7075
248	2024	XA78S	X7178
43S	4043		

Under the new system temper designations remain the same. For example, 75S-T6 under the old coding becomes 7075-T6 under the new.

"Octopus" Vacuum Chuck

Convair-San Diego has developed an "octopus" vacuum chuck which uses removable rubber grommets that allow any shape skin to be placed on a milling machine. Up to 1000 suction cups can



be used to hold the skin during milling but, if fewer are required, any number can be removed and a center screw tightened to shut off the vacuum supply to the area affected.

Tiny Stop Nut Blamed For Landing Mishap

A tiny 10-32 stop nut lodged in the uplatch mechanism of the right main landing gear caused the landing mishap of an American Airlines Convair 240 at Glenview (Ill.) Naval Air Station Nov. 9, 1954.

On original approach to Chicago Midway Airport the crew found that only the nose and left main gear could be extended. After circling the area for about 45 minutes in an attempt to lower the right gear, the AA 240 was diverted to Glenview NAS where it landed with only the nose and left gear down. During the landing roll the airplane settled on its right wing causing extensive structural damage.

Cost of repairs to restore it to operating condition are estimated by the airline at \$35,000.

Designers Can Learn About Melting Action From Meteorites

L ONG RANGE ballistic missiles, armed with thermonuclear warheads, promise to be the decisive weapon in any future war between major nations. One of the bigger factors which will decide if this is mere promise or a practical goal is the problem of heat at hypersonic speeds.

Range of a ballistic missile is directly related to its initial velocity. For ranges in excess of 3500 miles, assuming a short thrust duration, initial speed of the missile would have to be 20,000 feet per second or about 13,500 mph. At this speed the stagnation temperature (temperature of air at rest ahead of blunt parts of the missile) would reach about 33,000°F. No known material will withstand such temperatures.

In their 11-inch hypersonic wind tunnel at Langley Aeronautical Laboratory, Langley Field, Va., engineers of the National Advisory Committee for Aeronautics have been investigating the problems associated with this areodynamic heating phenomenon and possible methods of combating it. In a recent paper before the American Society of Mechanical Engineers, NACA's C. H. McLellan discussed highlights of these investigations.

McLellan and his associates used both solid and thin-walled models of Wood's metal, which has a melting point of about 150°F, to determine the manner in which aerodynamic heating will melt structural materials, the time element involved, melting patterns, and related factors. Tests were run at Mach



WHAT HAPPENS to a solid cone-cylinder model is shown above. In the tunnel is a duplicate of the original; held by NACA's C. H. McLellan is the model after testing.

6.9 with air speed, temperature, and pressure held constant.

Photos at left (frames from a 16-mm film) show the thin-walled (.041 inch wall thickness with a 3.38 inch solid 20° apex) model. It was cast around a low conductivity metal core.

Meteorites, McLellan explained, experience this same melting from aerodynamic heating when they enter the earth's atmosphere. The melting action absorbs sufficient heat to protect the part of the meteorite which survives until the mass has been slowed down to manageable speeds.

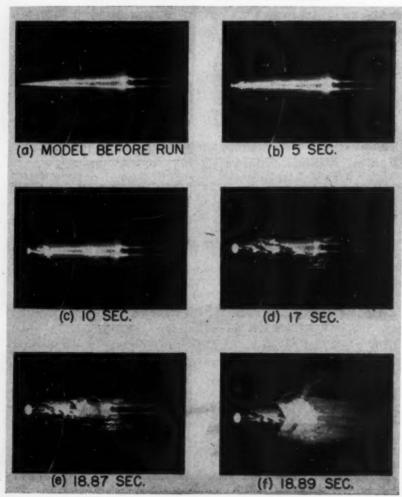
Designers of long-range ballistics missiles may have to take a lesson from the meteorite, McLellan suggests, and provide surfaces which are meant to take the brunt of the heat. There are other possible solutions, such as transpiration cooling or reverse thrust, but there is no simple answer.

Avon Powers Ryan Jet VTO

Powerplant for the Ryan Aeronautical Co. jet vertical take-off fighter has been officially identified as the Rolls-Royce Avon by officials of the British engine company. The announcement came shortly after the USAF permitted Ryan to confirm that it is working on such a plane. Only other jet-powered VTO aircraft in the U.S., so far as is known, is one company-sponsored by Bell Aircraft Corp., which uses two Fairchild J44's.

The Navy has two VTO fighters using Allison T40 turboprops flying, the Convair XFY-1 and the Lockheed XFV-1.

FILM STRIP shows thin-wall model fail in 18 seconds.





P&W J57—One of two current types powering 67% of 29 production combat aircraft.



WRIGHT J67—Based on Bristol Olympus, development engine due to power large share of 19 future combat aircraft.

WHAT'S BEHIND THE NEW POLICY

Last fall says Defense, there were 10 jet engines in production and three more in development. About 29 combat airframe types were in production powered with these 10 engines. Two of the 10 engines power 67% of all current production aircraft types, including the most modern designs. Some 19 future combat aircraft types are under consideration. Most of these presumably would be powered by the three development engines.

Pentagon's Proposed New Engine Policy Would Be Catastrophic, Says Industry

A PROPOSED Pentagon policy, now under direct fire from top Aircraft Industries Association officials and virtually every major engine producer, would slap rigid controls on future jet engine development.

Strongly opposing its adoption, AIA's board of governors contend it would have catastrophic results, and that irretrievable time, development progress, and money would be lost. President DeWitt C. Ramsey has petitioned Defense Secretary Wilson that a select committee of AIA members be heard to explain its stand before any final action by Defense.

Imminence of such a meeting, however, is questionable according to Pentagon sources. A spokesman told AMERICAN AVIATION that the proposal is more of an "early draft" than any final edition of what Defense is seeking. The military services, he said, plan to meet with Secretary Wilson to talk over the policy before any session with industry will take place.

The new policy, it was learned, is being handled in the office of Assistant Defense Secretary (Applications Engineering) Frank D. Newbury. Here's how it would limit (1) engine size selection, (2) engine development and application phasing, and (3), financing of future engine development.

• Engine Size Selection—U. S. Air Force and Navy would set up a standard system of spacing engine thrust ratings to which all new engine development projects would have to conform. Suggested as a minimum spacing is a 50% higher thrust rating for a given engine class over its next smaller cate-

For example, Defense suggests, a representative range for pure jet engines would call for thrust categories of 6700, 10,000, 15,000 and 22,500 lbs. A similar

line of standard ratings for turboprop engines would be established if future military requirements call for a wide range of power capacities.

• Engine Diameters—The same size spacing and range of thrusts would be accomplished by a series of basic engines having a maximum diameter 22.5% larger than its next smaller class. Recommended preferred diameters would be 25, 30.5, 37, and 45 inches.

• Development Phasing—A proposed five-phase procedure would govern all future engine design development projects. It would require: (1) military preparation of a characteristic or operational requirement, (2) circularization of industry for preliminary design proposals (design competition), (3) selection of two or more of the most attractive proposals for development support through the initial performance evaluation phase, (4) selection of two engines for support through the Intermediate Performance Evaluation phase, and (5) selection of the engine demonstrating the more attractive performance characteristics for the Final Development and Evaluation Phase.

• Financing—Research development projects would be completely financed by R&D funds and design development projects would in all cases come under R&D financing initially. However, procurement money could be used to finance design development projects for fabrication of parts and complete prototype engines, or for their development testing. Product improvement projects



Wilson

The New Engine Policy



Ramsey

DEFENSE SAYS . . .

Its objective is to assure minimum expenditure of funds, time, and effort in development and production

It will:

- Secure competition in early development.
- Extend useful aircraft life.
- Simplify production, test, maintenance, shipping, and ground handling.
- Assure adequate development before committing to large-scale production.
- Assure most effective use of Procurement/R&D funds.

INDUSTRY CONTENDS . . . Its result will be catastrophic . . . losing irretrievable time, develop-

ment progress, and money. It will:

- Eliminate competition in final development.
- Undermine existing powerplant engineering organizations.
- Prolong production cycle by at least two years.
- Restrict and delay development.
- Prevent timely and adequate supply of superior engines,



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would be financed completely with procurement money.

Also proposed is a separate apportionment of engine procurement funds for design development and product improvement as distinguished from funds of repetitive production and service engineering of engines procured for aircraft production programs. Under the new policy procurement funds for support of a design development project need not necessarily be related or restricted to any specific production program or contractor source of production engines.

In other words, procurement money could be apportioned to support any approved design development of any manufacturer.

Exceptions to the new policy, both from the standpoint of engine size selection and development procedure, would be what Defense calls applied research components and research engines which fall within the category of a research development project. Also excluded would be so-called product improvements of engines approved before the effective date of the policy and development engines which have already reached the prototype construction stage.



***William I. Selover, Sperry Gyroscope Co. S.W. district mgr., El Segundo.

*A. F. Bonnalie, UAL. Dir. of flight

training, Denver. ★C. E. Krebs, UAL. Supv.-mech., Honolulu.

★W. D. Meinert, UAL. Maint. procedures tech., San Francisco.

★H. J. Merchant, UAL. Ass't gen.

sales mgr., Chicago.

**R. W. Taylor, UAL. Ass't foreman, San Francisco.

★T. E. Wooley, UAL. Lead line mechanic, Salt Lake City.

★Noel G. Bliss, Panagra. Adm. ass't New York.

*Ralph C. Cook, WAL. Lead mechanic, Los Angeles.

★L. W. Tkac, AA. Aircraft maintenance foreman, Ft. Worth.

★Edward E. Webster, TWA. Line maintenance foreman, New York.

★Clarence J. Templeton, Flight dispatcher, Los Angeles. TWA.

*Duane D. Latourell, TWA. Ass't district operations mgr., Los Angeles. ★William R. Caye, Pratt & Whitney

Aircraft. Toolmaker, East Hartford. *Roy McLea, Pratt & Whitney Air-

craft. Gen. foreman, East Hartford. *Woldemar G. Brockert, Pratt & Whitney. Assembler, East Hartford.

★Frank J. Guernsey, Pratt & Whitney. Assembler, East Hartford. ★N. W. Rohde, AA. Overhaul gen. foreman, Tulsa.

- Circle No. 17 on Reader Service Card.

People

Manufacturing

R. C. Oertel, Esso Standard Oil Co. aviation dept. mgr., elected chair-man of the Aviation Technical Service Committee of the Division of Marketing of the American Petroleum Institute for 1955, succeeding W. D. Parker, mgr. of Phillips Petroleum Co.'s aviation sales div. W. S. Mount, gen.
mgr., aviation sales dept., SoconyVacuum Oil Co., is vice chairman.

John P. Knight, ass't gen. sales
mgr. of Gulf Oil Corp., is the Institute's

chairman of the Aviation Advisory Committee.





OERTEL

KNIGH1

D. S. Bixler is mgr. of Sinclair Refining Co.'s aviation sales.

Ray P. Powers named v.p. operations for Studebaker-Packard from v.p.-operations for Packard.

At Robertshaw-Fulton Controls Co. Dr. Leland G. Cole named director of the dynamics laboratory; Dr. W. M. Roberds and Maynard D. McFarlane named research scientists, and C. J. Thompson named chief design engineer.

Clark Hickerson, formerly contract administrator, named mgr. of Customer Service for Ryan Aeronautical Co.

Joseph W. Baird appointed military relations representative at Wright-Patterson Air Force Base for Lockheed Aircraft Service, Inc., replacing Walter J. Broderick, transferred to Lockheed Aircraft Corp.'s Georgia Div.

Rolls-Royce has reorganized management with the result that Lord Hives and A. G. Elliott give up the positions of joint managing directors and become executive chairman and vice chairman, respectively. J. D. Pearson, former chief executive of the Aero Engine Div., becomes the division's managing director. and F. Llewellyn Smith becomes managing director of the Motor Car Div. A. A. Rubbra, former Aero Engine Div. deputy chief engineer, appointed to the Board as technical director, and A. A. Lombard, appointed Aero's chief engineer.

Airlines

George L. Wertenbaker returned to Capital Airlines as assistant to the v.p. of traffic and sales after a tour of duty with the Air Force.

Theodore C. Pelikan, formerly Pan merican World Airways Latin Amerian Div. passenger sales supt., trans-erred to Lima as regional traffic and ales supt.

Willis Player elected v.p.-public reations for the Air Transport Associa-ion from director of public relations.



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For by buying through the nearest Bendix Distributor, fixed-base operators can reduce inventory -eliminate follow-up costs -economize on transportation-keep obsolescence at a minimum-reduce product deterioration, insurance, storage space and taxes.

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General Aircraft Supply Corporation Detroit, Michigan

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Pacific Airmetive Corporation Oakland California

Pacific Airmetive Corneration Kansas City, Kansas

Pacific Airmetive Corporation Seattle, Washington

Southwest Airmetive Company Dallas, Texas

Standard Aero Engine Ltd. Winnipeg, Canada

Standard Aircraft Environment Co. Mineola, Long Island, New York

Van Duson Aircraft Supplies Minneapolis, Minnesota



WHICH FUEL FOR TURBOPROPS?

BY WALTER A. KILRAIN

A N ADDITIONAL 140 lbs. of payload could be carried by the turboprop Vickers Viscounts of Trans-Canada Air Lines between Toronto and New York City by the use of JP-4 jet fuel instead of kerosene, the Canadian carrier estimates.

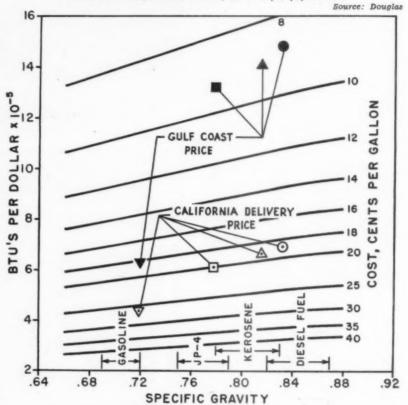
On other routes the advantage would amount to 240 lbs., TCA told the annual meeting of the Society of Automotive Engineers. In addition to the saving in weight, cost of the JP-4 fuel was found to average 1.5¢ per Imperial gallon less than kerosene. Yearly saving for TCA's fleet of 15 Viscounts: \$190,000.

The estimate and the reasoning behind it opened the Golden Anniversary meeting of the SAE in Detroit with a debate on turbine fuels that found TCA's Paul E. Lamoureux at odds with the chief powerplant engineer of the Douglas Aircraft Co., C. A. Weise. The merits of the two types of fuel were debated on a variety of technical points, but main emphasis fell on efficiency, safety, and cost.

•Efficiency—Specific gravity of the fuel is related to the amount of thermal energy available per pound and per gallon, TCA noted. As specific gravity increases, heat per gallon goes up and heat per pound goes down. If a transport is limited in maximum range by the capacity of its fuel tanks, high specific gravity is desirable. If it is limited by a desire for maximum payload on a given route, assuming that tank volume is more than adequate, the lowest specific gravity is desirable.

The carrier, unable to have its cake and eat it, must choose between maximum British Thermal Units per gallon or per pound. TCA's decision: Since volume of fuel tanks on most routes will be more than sufficient, choose the lighter fuel for maximum BTU per pound, thus saving weight for more payload.

Douglas, on the other hand, pointed to the fact that in a volume-limited aircraft design, increases in the size and WHAT YOU GET, in terms of heat, for what you pay for fuel.



range go hand-in-hand with increases in the density of the fuel, after speed and payload are fixed. The overall size of the plane must be kept down, cautioned Weise, since "the costs of repair (in manhours and replacement expense)... vary directly with first cost and complexity."

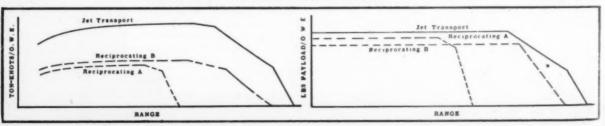
The freezing point of kerosene in aircraft use is -30° F; of JP4 it is 76° F. In TCA's opinion, "A freezing temperature of -30° F is not low enough for safe turbine operation, and creates a very real hazard of the filters blocking by wax or lines sludging in flight if the engine is shut down for a time at low ambient temperatures." Douglas agreed that, even with some sort of heating system installed, "starting up a

cold ship after soaking at extreme low temperatures is very difficult, and may make the whole scheme unattractive."

Weise maintained, however, that a heating system for the fuel could be set up for something under one percent of the weight of the fuel carried. Such a system would keep the fuel at 20° F when outside temperatures were -65° F. TCA countered with the claim that "airframe manufacturers are looking askance at the necessity to provide an additional airplane system with associated development, operating, and service costs, and a built-in airplane performance penalty. Provision to heat the fuel means compromising other airplane systems to provide engine bleed air, electrical power, or even waste heat

WORK CAPACITY of jet transport in pounds of payload and ton-knots.

Source: Boeing



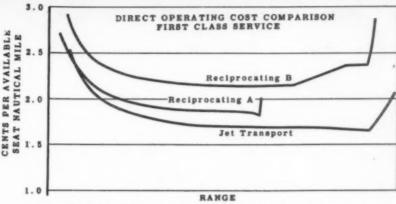
. . . It will be much cheaper to treat the fuel at the refinery than attempt to condition it in the airplane."

Whether or not airframe builders were looking askance at the freezing problem, Douglas was soberly considering conditions on the other end of the temperature scale. Fuels with high vapor pressure, like IP-4, tend to boil more readily than heavier fuels like kerosene. As the aircraft climbs, the inclination of the fuel to boil increases. "This evolution of vapor," said Weise, "requires special pumps in the tanks and can cause a vent in a tank with undesirable shape to function just like the tube in a coffee percolator and pump precious fuel overboard."

Trans-Canada dismissed the problem as academic. Even if JP-4 were at a tropical temperature of 100° F on take-off, declared Lamoreaux, it would not begin to boil off until an altitude of 40,000 feet was reached. Even this 40,000 was conservative, since it did not take into account the cooling of the fuel during the climb. TCA verdict: No problem for commercial operations in the foreseeable future.

*Safety—As far as fire in flight is concerned, TCA cited lightning as a possible source of ignition, but noted that a lightning strike would probably be accompanied by moderate or severe turbulence. Under such conditions, said Lamoreaux, a fuel fog of IP4 would probably constitute too rich a mixture to support combustion, whereas kerosene might not create such a rich atmosphere, and would consequently burn.

Furthermore, TCA continued, in case of an engine fire, risks would be less with JP-4 than with kerosene. A relatively small amount of heat (125° F) would boil off IP-4 vapor, resulting in an atmosphere too rich to support combustion; kerosene would boil only at a



JET OPERATING COSTS should undercut those of reciprocating engines. Source: Boeing

higher temperature (325° F), giving the fire more time in which to burn through the walls of the tank and penetrate the vapor space. It might consequently reach

New SAE President

CARL G. A. ROSEN is the new president of the Society of Automotive Engineers for 1955, succeeding William Littlewood, vice president of American Airlines. Rosen, a consultant to the president of the Caterpillar Tractor Co. and a faculty member of Stanford University, is a past v.p. of the society.

the fuel vapor when the mixture was still in a combustible stage.

As a third point, continued the airline, if fuel should somehow come into contact with the hot surfaces of the engine, kerosene would ignite at a temperature from 100° to 150° F lower than the ignition point of JP-4. "We

believe that the ignition margin," declared TCA, "is very significant in terms of safety in the air."

*Cost-Talks highlighted the fact that transportation and other charges will vary from operator to operator, rendering generalizations risky. TCA hopes use of wide-cut IP-4 may permit a large number of relatively small refineries to participate in production, increasing competition and reducing costs. Lamoreaux quoted basic prices from one oil company as 12.65¢ per (U. S.) gallon for kerosene and 12.00¢ per gallon for JP-4.

From fuels the meeting turned its attention to the airplanes those fuels will power. Among the prophecies

and analyses:

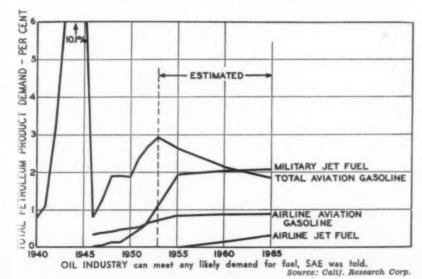
• Turboprop engines call for new airframe designs, not modifications of older ones, "although with all the advertising that has been put into some airplanes, I imagine they'd probably go to a biplane before they'd change the name." (TCA's J. T. Dyment)

•Final decision on a jet transport won't be long delayed by airlines, and the Douglas DC-8 jet will offer lower operating costs than the DC-6 or 7. (Douglas' Carlos Wood)

*Speeds of 1000 mph and three-D presentation of data on the windshield for instrument flight will be accomplished within the next 50 years, with instruments as reliable as today's telephones. (Douglas' A. L. Klein)

·Clusters of jet engines, each with 4000 lbs. thrust, would solve the problem of producing a variety of engine types for different uses, with weight per pound of thrust cut to half the present figure. (Sanderson & Porter's P. B.

•Chimpanzees have been carried aloft in bombers, launched at supersonic speeds in missiles, fired from the missiles in ejection seat tests, finally parachuted back to the ground. Description of the tests: "Effective but expensive." (Martin's W. K. Bonas)





VERTICAL TUBE in front is transparent when not in use.

TELEVISION INSTRUMENTS NEXT

THE PRINCIPAL building block in a whole new concept of aircraft instrumentation has been unveiled by the Office of Naval Research and Bureau of Aeronautics. It is a transparent flat-plate television tube developed by the West Coast Electronics Div. of Willys Motors.

By 1958 the Navy expects to be flying aircraft equipped with only two basic instruments, both of them television tubes of this new design. One of these will be a semicircular plate mounted vertically in front of the pilot in his line of sight when looking through the front cockpit windows. During VFR flight the tube would be inoperative and transparent.

During instrument flight all the information required to fly the aircraft would be depicted on the screen—altitude, speed, and attitude in all three axes: pitch, roll, and yaw. Physical features of the surrounding terrain would also be shown artificially.

In this manner the pilot would not be required to make the difficult transition now necessary in changing from visual flight to flight by multiple complex instruments, each requiring the pilot's judgment to read and integrate with intelligence from other instruments.

Second instrument in the Navy's program is another television tube below and at right angles to the vertical instrument. This is a round-faced tube used to display all other types of information required by the pilot, including such things as the broad physical features of the earth below (depicted by analogy), distance to base (DME), fuel remaining, BMEP, rpm. Most of this will be presented by calibra-

tions around the rim of the tube.

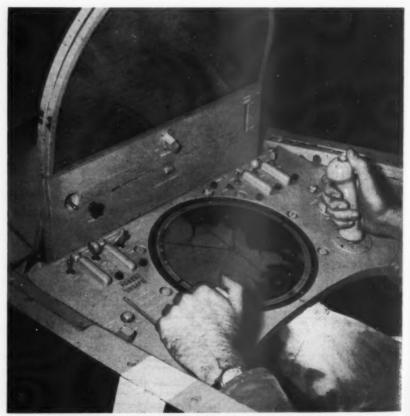
Use of television tubes will make it possible to exercise some selectivity regarding the data appearing on the instrument panel at any given time.

The all-important transparent tube was developed by William Rose Aiken, director of research at the WM laboratory, and is a proprietary item of the Kaiser Motors subsidiary. It is about three inches thick and consists of a phosphor screen sandwiched between glass plates. Because it uses electrostatic principles, rather than magnetic, it is lighter and requires less power.

In operation, electronic control is used to excite selected areas or spots on the phosphor screen. The electronic beam enters the tube along the horizontal edge adjacent to a row of transverse deflection plates. It travels in a field-free area between these and comparable vertical plates and, by controling the voltage of the plates, the circuitry bends the beam as required to illuminate the screen with images or other data.

Willys claims very powerful focusing ability for the tube because the convergence angle is large, enabling the phosphor screen to have high definition and brightness.

Many of the instrument manufacturers have been working with the Navy in developing the revolutionary approach around the Willys-developed tube. Initial showing to the rest of the industry took place at Douglas Aircraft Co. earlier this month. Douglas designed the mock-up around Navy specifications.



AROUND RIM of horizontal tube calibrations replace other instruments.

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...this is the NAVY'S new T-34B

On June 17, 1954, the United States Navy announced the selection of Beechcraft's T-34 military plane as the Navy's new primary trainer.

On December 17, 1954, just six months later, the first U. S. Navy T-34B was delivered on schedule. Others will follow from the Beechcraft production lines for use by the Naval Air Training Command.

By use of the new T-34B, the U. S. Navy expects to make savings of millions of dollars in the over-all cost of its training program. The unit cost of the plane is low, and the per hour cost of flying is a fraction of the present cost of using heavier planes.

The T-34B is rugged, safe, and thoroughly dependable It is the world's most economical military trainer.



Beech Aircraft Corporation, Wichita, Kansas, U. S. A.

Beech Builds: USAF T-34 • USNavy T-34 • USArmy L-23 • USAF C-45 • Model 35 Bonanza • Model 50 Twin-Bonanza • Super 18 Executive Transport

AMERICAN AVIATION

TRANSPORT TRENDS Washington, D. C., Jan. 31, 1955

BATTLE LINES ARE ALREADY BEING DRAWN following the President's request for \$11 million in grants-in-aid to airports, the lowest ever made. Typical reactions:

Airport Operators Council: Expressing "regrets" over the proposed budget, ACC president Fred M. Glass, added that all indications point to a "great need" for funds far in excess of the \$11 million figure.

American Municipal Association: The association's policy calling for \$100 million annually still stands and the airport sponsors committee will meet early in February to formulate a statement highlighting its sentiments, according to AMA director Randolph Hawthorne.

U. S. Conference of Mayors: Expressing "adverse" reaction to the budget provisions, executive secretary Col. Paul V. Betters indicated that the Conference will tell Congress during appropriations hearings that it should fulfill its obligation for \$500 million contained in the Federal Statute.

AIR NAVIGATION DEVELOPMENT BOARD is expected to get strong Commerce-Defense support for its \$4.4 million appropriations request. USAF is slated to contribute \$1.2 million of this sum with the Navy share set at \$650,000, Army at \$550,000 and Commerce Dept. at \$1.8 million.

expecting freight to double its rate of increase. Although final 1954 figures aren't in, best estimate is that freight revenues and ton-miles were up 8% to 9%. At least one expert predicts that 1955 will be 18% to 20% over 1954 revenues and ton-miles. Reasons: favorable business climate, increased service and promotion by airlines.

Big surprise has been air express comeback. After an alarming slump (as much as a 30% drop) in first eight months of 1954, a traffic spurt in the last four months brought the year's total almost up to 1953. Gain was almost entirely due to business from automobile industry, in connection with model changes. Increase, however, is expected to hold, with general business conditions favoring small-package traffic. About a 4% increase over 1954 is expected.

FIRST CLASS MAIL BY AIR VOLUME continues to climb slowly, and the service is a bargain for the government. In November, latest month available, more than 301 tons moved (both ways) on routes from New York and Chicago to Florida. Government's cost was \$52,939. Over 861 tons were carried New York and Washington to Chicago at cost of \$112,768. Local service first-class mail cost \$7,226 for the month (tons not available).

Slow rate of growth is seen in the fact that November, 1953, one month after experiment started, showed 826 tons on the N. Y. and Washington to Chicago routes, against 861 tons a year later. However, Post Office is satisfied with both volume and airline performance. In only one or two instances has mail been turned over to the railroads due to weather.

PERFECT SAFETY RECORD was tallied last year by member carriers of the Independent Military Air Transport Assn. The 13 irregulars flew over 590 million passenger-miles on world-wide routes. IMATA's fatalityfree operation has now reached 17 months.





for progressive young men,

top careers of the Air Age,

including educational opportunities and a lifetime income



-with the United States Air Force

Deservedly the proudest young men of our day are those who have decided to enlist in the U.S. Air Force. They have a brilliant future in store.

Trained in the most efficient aircraft built-as pilots or in supporting rolesmembers of our Air Force enter an expanding career. Realistically, their service offers opportunity to learn the specialized skills of the Age of Flight through on-the-job training and a chance to continue their educations through and beyond the college level. And, at an age when most civilians still grope for a future, the man with the Air Force career is eligible to retire with a life income.

As a designer and builder of modern aircraft, Douglas is in a position to judge the skills developed by Air Force training. They couldn't be higher.



Transport Aviation

What American Airlines Wants in a Turboprop

BY ROBERT M. LOEBELSON

MERICAN AIRLINES technical people last week were studying the proposals of four airframe manufacturers for a turboprop replacement for AA's large fleet of Convair 240 re-

gional airliners.

When they select the winner it will be the first step in AA's decision to purchase a four-engine turboprop for the carrier's short-haul routes. And this order undoubtedly will be followed by another for a long-range turboprop transport (possibly the Douglas DC-7D with British Rolls-Royce RB109 engines).

Entrants in AA's competition for

the short-range transport are:

 Convair, which is proposing a stretched-out Model 340, with four Rolls-Royce Dart engines, four Elands, or four T56's.

• Lockheed, which has a brand new high-wing design using one of three turboprop engines—British Napier Eland, Rolls-Royce Dart, or U. S. Allison T56.

• Douglas, which is offering a DC-6 type craft powered by four Allison

T56's.

• Vickers-Armstrong, Ltd., which has already sold 60 Viscounts to Capital Airlines and which would like to follow up with a sale of 800-series Viscounts (four Darts) to AA.

What kind of plane is it that AA

vants?

American officials declined to make the specifications available, but American Aviation has obtained exclusive data on the aircraft AA is planning to buy. Among the requirements:

• Type: Four-engine turboprop. • Passenger capacity: 60-65 (with a five-abreast seating arrangement).

• Payload: About 14,500 lbs. with 60 passengers. This would include the equivalent of 225 lbs. per passenger seat (a 160 lb. passenger, 30 lbs. baggage, 35

lbs. cargo) plus an allowance of 1000 lbs. for service weight growth.

• Range: With a 14,500 lb. payload, the craft should have an operating range of at least 750 miles against a 50 mph headwind with adequate reserves.

• Cruise speed: 350 mph at the altitude best suited for the cruise power of the engines in the design proposal.

• Runway lengths: Airplane should be able to take off from a 4500-ft. runway with full payload and fuel for a 200-mile flight with 50 mph headwind and be able to land on a comparable runway. With fuel for a 600-mile flight, the plane should be able to get off from a 6000-ft. runway.

• Fuel provisions: Plane shall have enough capacity for a 1000-mile range at full cruising power against 50 mph headwinds. No fuel should be carried inside the fuselage space and all fuel should preferably be outboard of the in-

board engines.

Configuration: A high-wing arrangement is preferred but a low-wing

version may be submitted if it can be proved to have advantages. However, if a low-wing version is offered, efforts should be made to obtain as low a floor level as possible for loading convenience.

• Passenger accommodations: Either a four- or five-abreast seating arrangement is satisfactory and seat spacing should be about 40 inches. Aisle width should be at least 18 inches. Carry-on baggage features and integral loading steps in the Model 240 should be continued. Visibility through cabin windows for each passenger should equal that of the Viscount. Passenger loading door should be located on the left-hand side of the forward end of the fuselage aft of the cockpit area.

• Pressurization: At long-range cruising altitude, cabin pressurization shall be equivalent to 6000 ft. Manufacturers should also consider self-contained air-conditioning units to maintain comfortable temperature and humidity when the plane is on the ground.

 Cockpit: Space for a two-man crew plus a jump seat (which may be stowable).

• Radar/autopilot/communications: The plane should incorporate AA-fur-



Fourteen USAF navigator-bombardier trainees go to school in this Flying Classroom, the T-29C, built by the Convair Division of General Dynamics Corp. Note three astrodomes and flat, circular fitting for periscopic sextant atop fuselage.



Two new 59-passenger Lockheed Super Constellations are now in service on the Venezuelan airline Linea Aeropostal Venezuelan. They are serving on LAV's routes to New York City and across the Atlantic to Rome.

nished radio equipment and make provisions for the latest, most modern buried antennas. Space shall also be provided for radar in the plane's nose and for one of the small autopilots or the airplane control actuation type autopilot.

• De-icing: Airplane should be certified for NACA heavy ice conditions. Engines shall be fully de-iced for all-weather flying. Heated airfoil de-icing, electrical propeller de-icing, and Nesa glass window de-icing are preferred. Latest radome and antenna de-icing shall be provided.

That, basically, is the kind of 240 replacement AA President Smith wants.

If Vickers should win the competi-

tion British prestige, which dropped considerably after the Comet accidents, will soar higher than before because AA is one of the world's leading airlines. Vickers does have one advantage—it is the only airframe company which has an assured supply of Darts.

If a Dart-powered Lockheed or Convair is selected by AA, the promised delivery dates of the airplanes will have to be moved well into the future because Rolls-Royce has indicated it will supply Vickers' needs first until 1958 before selling the engine elsewhere. And even if Westinghouse Electric Corp. should take up its option to build the Dart, it will be many months before Dart production is begun at Kansas City.

domestic cases, it is only advisory to the President in international matters.

If the President reverses the agency's recommendations, as he did in the Colonial-Eastern Case, it reflects on the board's judgment unless the reversal was dictated by national considerations beyond CAB's realm. If he ignores the recommendations and permits records to grow stale, the White House, CAB, and the airlines suffer.

The Trans-Atlantic Cargo Case is now up for a Presidential ruling for the second time. In the last years of the Truman Administration, a board verdict against certificating all-cargo lines in the Atlantic was upheld, but new hearings were ordered to develop an up-to-date record.

Result of those new hearings was a 3-2 board vote in favor of temporary certification of Seaboard & Western Airlines for a non-subsidized Atlantic cargo operation. But with eight months now gone by since the case was submitted, the "fresh" record is growing staler by the minute.

The New York-Balboa Case has bounded back and forth between CAB and the White House so often it is more of a legend than an important case designed to improve airline service for thousands of taxpayers. The board's decisions never change substantially in that case but getting a President to sign one of them has been an elusive project.

Truman ducked it by letting it gather dust until the day before Eisenhower took office. Then he returned it to CAB for resubmission to the new President—matter of courtesy, you know. Eisenhower took one look at it and decided it would be good to have the record brought up to date.

Almost two years has elapsed and now he has it again. CAB's recommendation is to set up New York to South America interchanges combining Pan American, National, and Panagra in one, and Eastern and Braniff in another.

The West Coast-Hawaii Case, in one major respect, offers a parallel issue to that in the Trans-Atlantic Cargo Case. It includes an application of Transocean Air Lines, a non-scheduled line, to operate low-fare Pacific services in the same evolutionary manner in which Seaboard & Western hopes to graduate from the non-scheduled class to operate non-subsidized cargo services in the Atlantic.

But reports indicate that CAB's recommendation to the President does not favor Transocean's proposal. The White House thus has contrasting CAB proposals on the thorny "freedom-of-entry" question and the area for consistency between CAB recommendations

Confusion Compounded:

CAB vs. the White House

BY WILLIAM V. HENZEY

THE HIGHLY VULNERABLE prestige of CAB is being dealt another body blow, this time by the Administration which, in two years, has either ignored or reversed every CAB recommendation in major international airline route cases.

Those ignored exceed by far those reversed, and at present there are four important CAB-decided cases gathering dust for lack of a Presidential ruling.

One of them, the eight-year-old Reopened Trans-Atlantic Cargo Case, has been pending at the White House since last spring.

In addition, the board has submitted its recommendations in the New York-Balboa, West Coast-Hawaii, and Trans-Pacific Renewal cases.

The White House may even be said to be responsible for not having a fifth major case pending before it. The controversial States-Alaska Case, at which CAB wants to take another look in private, is being held in abeyance until the White House fills the board vacancy created when Oswald Ryan's term expired Dec. 31.

Actually, the only major case on which the White House has acted since the Administration took over is the Colonial-Eastern Merger Case and, in that, the board's recommendation for approval of the merger was reversed.

While it would be the height of overstatement to say domestic cases, in which CAB is independent of the White House, run smoothly, it nevertheless is true that confusion in such cases is comparatively minor when viewed beside international proceedings where, by law, the President has the final say.

The Administration thus must share much of the responsibility for the criticism now being leveled directly at CAB. While the board is a free agent (if you discount normal pressures) in and White House decisions is mini-

The board's findings in the Trans-Pacific Renewal Case, thoroughly aired in recent issues of AMERICAN AVIATION, would more or less maintain the status quo in the Pacific except to give Northwest Airlines permanent rights on its current temporary route to Tokyo.

These are all recommendations and, if the record of the Administration in its first two years is any gauge, it would be unsafe to predict that future international routes will be as CAB has

found that they should be.

Who in the White House is responsible for the handling of these cases when they leave the board is somewhat of a mystery. When former airline official Charles F. Willis, Jr., was appointed a Presidential aide, it was considered he would primarily be responsible for aviation matters.

Willis, however, is an assistant to Sherman Adams, Presidential assistant, and many link Adams with any important moves the White House may

take on aviation.

Still are those that claim the real power is the President's general counsel Bernard M. Shanley. It was Shanley who, in the early months of the Eisenhower Administration, called over CAB's general counsel Emory T. Nunneley, Jr., and purportedly set up what was hoped to be a smooth liaison between the agency and the Presidential staff.

To date, however, if any of these individuals can be looked on as an aviation power, it is only in the negative sense for international aviation is suffering from the White House's inactivity.

CAA Files Brief In Pilot Immunity Case

CAA General Counsel has filed its brief in the District of Columbia U. S. Court of Appeals petitioning for review of CAB's enforcement decision in the United Air Lines-American Airlines Convair 240 collision August 23, 1953. At issue is the CAB grant of immunity to UAL pilots preventing suspension of their certificates.

CAA claims that CAB erred in holding that suspension of airmen certificates is a type of penalty from which immunity is provided by Section 1004 of the Civil Aeronautics Act. It contends that the CAA Administrator, as sole officer of the government charged with the duty of enforcing safety, has standing to petition for review of the CAB order.

CAB and intervenors (UAL pilots L. H. Brubaker and C. E. Olsen) are due to file briefs by Feb. 27.

American and ALPA Agree to Agree

IT HAD TO HAPPEN sooner or later, but it was last week that the long-standing disagreement between the Air Line Pilots Association and American Airlines over flights lasting longer than eight hours appeared headed for a final settlement.

The compromise was doubly significant. It would not only end the argument between AA and ALPA but it presumably would also set a pattern for similar pacts between ALPA and United and Trans World Airlines as well.

This, it appeared, would be the compromise: American, which operates three westbound Douglas DC-7 flights non-stop to the west coast daily, would

GIV.



C. R. SMITH C. N. SAYEN

American's and ALPA's prexies

give the pilots and co-pilots on those flights some sort of overtime for any flying they performed beyond eight hours. Negotiators apparently were trying to work out whether the overtime would be in cash (and if so, how much) or in credit toward the pilot's maximum of 85 hours a month.

Sources close to the situation indicated that when the final compromise is worked out by AA and ALPA bargainers, it would be turned over to David L. Cole, the neutral in the dispute, so that he could submit it as a recommendation. Both would accept this recommendation "with reluctance."

There was a good reason for this maneuver. It provides a face-saving maneuver for both sides.

In originally opposing flights lasting more than eight hours and in calling a 25-day strike of 1200 American pilots in August, ALPA had steadfastly maintained that the pilots were not in-

terested in more money or in "feather-bedding" by insisting on a third pilot for those flights. The only issue, said ALPA, was "safety." But ALPA, recognizing that the DC-7 non-stop flights are to be a permanent part of American's operations, could now forget their argument about safety and bow "with reluctance" to the recommendations of the neutral mediator.

American also is yielding a point. Cole had pointed out in his interim report and recommendations that the eight-hour day is becoming standard in American industry and that some sort of penalty should be placed on AA to deter the carrier from continuing the "essentially undesirable" condition. At the same time, the one-time head of the Federal Mediation and Conciliation Service had recommended that "the pilots should be compensated in some form for their part in helping to produce more revenue in less time." The overtime pay for the non-stop DC-7 pilots is obviously in line with these recommendations.

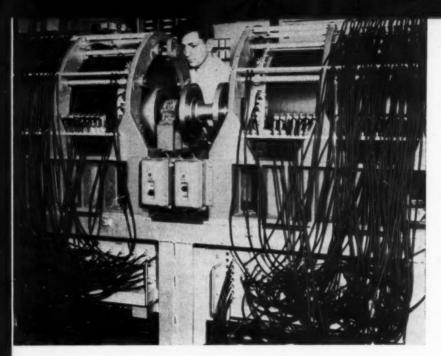
Thus both sides simultaneously have gained and lost. ALPA members will fly the planes to the west coast non-stop even though flights of more than eight hours are presumably still unsafe if only two pilots are in the cockpit. But they will have established the principle that AA pilots (and subsequently those on TWA and United) should get extra compensation.

AA will have won its argument that non-stop DC-7's should continue to operate even though the plane as yet cannot make the flight westbound in under eight hours on a regular basis. And American successfully rejected the bid by ALPA for a third pilot.

Still undecided is the breach of contract suit for \$1 million in compensatory damages and \$250,000 in punitive damages, which American brought against the pilot union just after the strike. The probable outcome of this suit (rescheduled for Jan. 27 in the U. S. District Court for the Southern District of New York) is a withdrawal. Without a guarantee that the court case would not be pressed, it is highly unlikely that ALPA negotiators would have agreed to any kind of settlement.

Tip-off on the probable course of the court case came before Federal Judge Alexander Bicks on Jan. 18. When the case was called, AA's attorney asked that the hearing be postponed until later in the day because the two sides were believed to be near an agreement. Late that afternoon it was requested that the case be carried over to the 27th.

Probable reason for the delay is that Cole was in the midwest at the time, trying to mediate another labor dispute. On his return, it was expected that he would be presented with the compromise so that it could be recommended.



SOMEWHERE in this maze is an unused portion of memory.

Electronic Brain Gets a New Job

THE ELECTRONIC BRAIN which handles control of plane reservations for American Airlines in the New York area has been given an additional task—furnishing information on whether any one of the scores of daily plane arrivals and departures will be on time, early, or late.

A previously unused portion of the Magnetronic Reservisor's "memory" will be employed to relay information on how far ahead or behind schedule a given flight is and spell it out in increments of five to 75 minutes.

Here's how it works: Flight dispatch, using a special keyboard, sends arrival and departure information right to the Reservisor on a regular schedule. Revisions are made as needed and the device stores the information. When a reservations agent is asked about the arrival or departure status of any given flight, she need only press a set of twin buttons to change the set from a reservations-maker to an information-seeker. The answer comes back almost immediately. In the case of departures, the machine will tell the agent if the flight is routine or delayed and the reasons for the delay. For more complicated situations, a "call" button lights up, telling the agent to call a central position for the additional information.

AA, which has been using the Reservisor 22 hours a day since mid-1952 with 99% reliability, is planning to restrict "flifo" (flight information) on the Reservisor to the New York area at first. But as the automatic reservations system is expanded to other cities "flifo" will go along

cities, "flifo" will go along.

The additional use for the "brain" was worked out by engineers for AA and The Teleregister Corp., Stamford, Conn., which manufactures the Reservisor.



IN FLIGHT DISPATCH—Flight information is put into the Magnetronic Reservoir by an operator who uses both an
agent set (left) and a master agent set
(right) to record information in the
"memory." Placing the plate in the
agent set routes the circuit to a specific
section of the "memory" drum. Then by
activating the proper buttons and keys
on the master agent set the flight data
is recorded in its proper place on the
memory drum.

Reconsider in Alaska, Congressmen Ask CAB

OPPOSITION to CAB's Dec. 8 decision to drop Pacific Northern Airlines and Alaska Airlines from the States-Alaska market reached a new peak in mid-January when the entire Congressional delegations from Washington, Oregon, and Alaska asked President Eisenhower and CAB to maintain the status quo by re-certifying all four lines in the area.

CAB's plan, now being held in abeyance, was to continue Northwest Airlines between Seattle and Anchorage, to continue Pan American World Airways between Seattle and Fairbanks, to give PAA access also to Anchorage, and to drop the two Alaskan lines.

Letters and wires now said to total "thousands" were forwarded to CAB and the White House protesting the CAB's plan.

Whether the agency will change its mind is open to speculation. It appears certain that future consideration will be given but at press time none of the remaining four members appeared willing to change his vote.

One thing is certain despite fears of many in the Pacific Northwest and Alaska, CAB is not about to postpone decision in the States-Alaska Case until it completes its investigation of intra-Alaska air routes.

The intra-Alaskan investigation was launched several years ago at the direction of former President Truman, but has never advanced on the board's docket. Linking the two cases was discussed by the board but rejected.

The Congressional groups protesting the Dec. 8 vote claimed "the effect would be to virtually destroy two airlines whose organization and equipment have been expanded to where restricted operation would not be efficient.

CAB Combines 10 Bids In N. Y.-Miami Case

A PPLICATIONS of 10 airlines for service in the Boston-New York-Miami area have been consolidated by CAB in what will be known as the "long-haul" phase of the New York-Miami Service Case.

Primarily, the proceeding was set in motion by CAB last August to determine if another carrier or carriers should be certificated in competition with Eastern and National along the Atlantic seaboard. Impetus for the board's action was New England Congressional support for Northeast Airlines' bid for extension from New York to Miami.

A prehearing conference was held

by examiner Thomas L. Wrenn on Sept. 24, 1954, but so many applications were filed that further action was held up.

Significant among applications for a Boston-New York-Miami route is one filed by Pan American World Airways. The PanAm bid is for a "domestic" route between the Boston and New York terminals of its trans-Atlantic route and the Miami terminal of its Latin American routes.

Because the PAA application was included in the case, CAB also granted recognition to Braniff Airways bid for extension from Miami to New York via Washington, Braniff currently serves Miami on its Latin American route.

The board also said it will consider Miami extension bids of Northeast, Colonial, and Capital, and Delta-C&S. In addition, applications of North American, Resort, Riddle, and Peninsular were consolidated in the long-haul phase.

Hearings are expected to get under way some time in April.

CAB BRIEFS

Pending Cases . . .

Efforts of CAB and the Post Office to reach a compromise on a new service mail rate structure for domestic trunklines have collapsed and the case is scheduled for full procedural treatment. Carriers estimate from two to three years will be required to complete the proceeding known as the Domestic Trunklines Service Mail Rate Investigation.

Hearings were completed in mid-January in the Delta-C&S Route Junction Case in which DAL-C&S seeks to use Ft. Wayne as a junction point for northern routes of the merged company. Present junction is Anderson-Muncie-New Castle but it is unserved because of airport conditions, CAB decision by late spring is possible.

In the Southwest Renewal Case briefs are now in and an examiner's report can be looked for in several months. One of the most important renewal cases in local service history, it includes such issues as (1) permanency for local lines; (2) merger of two local lines; (3) transfer of local points to another local line; and (4) absorption of a local service line by a trunk.

CAB Applications . . .

Northeast Airlines and Delta-C&S Air Lines have agreed to dismissal of their 1950 merger application in line with NEA'S notification to CAB that merger agreement has been terminated.

Aircoach Transport Association and Independent Military Air Transport Association asked for immediate temporary authority to conduct air exchange operations pending final decision on permanent applications.

North American Airlines has asked CAB to reconsider its appeal of an examiner's ruling whereby NAA hopes for deferral of an examiner's report in its enforcement case until after a similar report is issued in the New York-Chicago route case. Original appeal lost because CAB's four members split 2-2.

Recent CAB Decisions . . .

Ellis Air Lines and Alaska Coastal Airlines mail authorizations renewed for seven years; temporary authority of Ellis to carry persons and property between Ketchikan and Annette Is. made permanent.

Pan American World Airways authorized to operate between Damascus, Syria, and Teheran, pending decision on other service plan changes.

Colonial Airlines denied exemption for authority to operate between Glens Falls and Syracuse, N. Y.

Cariboo Air Charter, Ltd., granted three-year foreign permit for irregular air service between Canadian and U. S.

CAB Calendar . . .

Feb. 2—Hearing, Reopened Fayetteville Service Case. Washington, D. C. Docket 5592.

Feb. 7—Hearing, Guatemala City-Los Angeles Renewal Case (Pan American). Washington, D. C. Docket 6615.

Feb. 15—Hearing, Paducah Service Case. Washington, D. C. Docket 6035.

Mar. 7—Hearing, Domestic Trunklines Service Mail Rate Case. Washington, D. C. Docket 6599 et al.

Mar. 22—Hearing, Helicopter Air Service Renewal Case. Washington, D. C. Docket 6600.

Apr. 18—Hearing, East-West Air Freight Renewal Case. Washington, D. C. Docket 4770 et al. Ppd. from Jan. 17.



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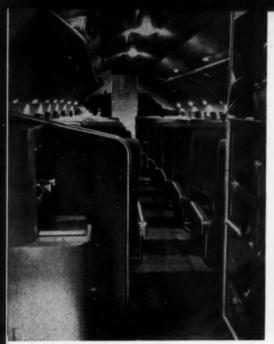
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Room for 26 passengers, baggage, and buffet.

Inside Allegheny's High-Density DC-3

BY WILLIAM D. PERREAULT

A LLEGHENY Airlines has engineered a new high density cabin for its Douglas DC-3's which gives a new dimension to the plane's passenger accommodations. The first plane modified to the new configuration, ship No. 91231, is now flying and provides roomy seating for 26 passengers plus the cabin attendant, permits unrestricted loading, and provides carry-on baggage space—all accomplished with a weight saving.

The new configuration is the handiwork of Richard Wagener, an engineer, working with maintenance director Elbert Cheyno. Initial aim of the rework was to remove the loading restrictions which make it necessary for DC-3 operators to specify which seats can be occupied during most part-load flights. This meant moving the center of gravity forward and was accomplished primarily by moving the forward cabin bulkhead ahead 20 inches to the rear of the radio rack at station 117½.

Aerotherm seat rails were installed in the cabin floor and seven rows of Flight Equipment & Engineering Corp. seats were installed in the rails with 37½ inch pitch. The first row has three seats and a 13½ inch center aisle. The remaining six rows are made up of two dual seat units on each side of a 12¾ inch aisle. The new seats were extensively re-engineered to meet Allegheny's specifications.

• This arrangement moved the last

row of seats forward of station 390 and left considerable space at the rear of the cabin for large carry-on baggage racks on the right side of the fuselage. These extend from station 390½ to 465½. The lavatory, probably the largest in any airline DC-3 aircraft, extends from the rear of the baggage racks to the bulkhead at station 506. The compartment width ranges from 36 inches to 30 inches following the cabin contour lines.

Two additional windows are provided in the front end of the extended cabin, one on each side starting at station 117½. In removing the cargo door in this area and installing new windows in the reskinned area, the alcohol supply tank was moved from the interior to the wing fillet as in some of the later military DC-3 models. One emergency exit was also relocated to row seven on the right side of the fuselage.

• Allegheny's food servicing requirements are simple and the maintenance-engineering team came up with a buffet tailored to the requirement. The pint-sized buffet is to the left of the cabin door and behind the last row of seats on the left side the fuselage. It weighs only 20 pounds, yet provides space for two two-gallon thermos jugs (one coffee, one water) and carries a cup dispenser and a trash container. The top is flat, making a good desk for the flight attendant.

The area aft of the rear cabin bulkhead at station 506 is divided into two large cargo compartments reached through a door from the cabin or from the rear cargo loading door, revamped during Allegheny's earlier ship modification. These compartments will handle 1200 lbs. and 1070 lbs. of cargo in addition to the 900 lbs. which can be loaded in the carry-on baggage racks, 450 lbs. per compartment.

• The whole job on the first plane cost about \$12,000, including engineering and some 1450 man-hours, work. This particular aircraft, the heaviest in Allegheny's fleet and weighing 110 lbs. more than the fleet average, weighed 17,891 lbs. at the start of the program and 17,883 lbs. after the modification was completed.

The modification was handled during overhaul, at which time some other major changes were made to the cabin. One of the most apparent was a complete relining of the cabin with Duracote above the hat rack level and Boltaron below the window level. The ceiling lining is made up in cabin length strips, seven panels covering the whole area. There are no cross seams so that the lengthwise seams give the impression of much greater cabin size.

The new seats are covered with a blue-green Goodall fabric, and matching curtains carry a gold thread to add "a touch of richness."

Allegheny is now planning to convert the rest of its planes to the new interior.



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Valves

DENOUNCED BY INDIA a year ago, the U.S.-Indian bilateral air transport agreement expired the middle of this month. This did not mean the end of Indian traffic rights for TWA and PAA, but it did force the two U.S.



carriers to accept terms of temporary permits, necessitating a reduction in service - two instead of three round trips weekly by each airlineand bringing about elimination of operations to Delhi by

Pan American

The imposition of restrictions on U.S. flag carriers' operations by the Indian government brings to mind some of the restrictions and deficiencies in airline service much nearer home which stem mainly from skill (or lack thereof) in diplomatic bargaining. The prime example is, of course, the amazing situation whereby the only non-stop service between New York and Mexico City is provided by Air France.

To the north, however, things are somewhat better for U.S. carriers. For example, there are no reciprocal Canadian services for Colonial's route from Washington to Ottawa and Montreal, Northeast's from Boston and intermediate points to Montreal, Northwest's from Chicago and intermediate points to Winnipeg, and Western's to Leth-bridge and Edmonton. On the west coast, only United connects Vancouver with San Francisco and Los Angeles; the TCA coastal route terminates at

On the other hand, TCA has a monopoly on operations between Florida and Canada, between Cleveland and Canada, between Chicago and eastern Canada, and between Boston and Canadian points to the northeast. TCA, incidentally, provides the only one-plane service between North America and Barbados in the British West Indies; the island is one of the few in the Caribbean served by no U.S. carrier.

Although U.S. airlines provide excellent service from Miami to Nassau and Jamaica, direct flights to these two British islands are the monopoly of foreign airlines: BOAC provides the only direct service between New York and Nassau, and shares with Colombia's Avianca the distinction of providing the only through flights between New York and Jamaica.

Full Fatigue Test Faces the Herald

Because of increasing British-and international-concern about fatigue, Handley Page Ltd.'s program for its Herald four-engine "DC-3 replacement" (AMERICAN AVIATION, Sept. 27) now calls for construction of four prototype airframes: two for flight and two for ground testing.

One of the latter is for normal ultimate load static tests and the other is for full fatigue testing (including a tank program for cabin pressurization fatigue).

Target is a 50,000-hour fatigue life on the whole airframe. Since no zinc alloys are used in the Herald, the aircraft should be relatively free from fatigue problems. Handley Page reportedly will spend almost \$5 million on its ground test program for the Herald.

Transport Briefs

Pakistan International Airlines will open a Karachi-Cairo-London service next month; Super Constellation equipment will be used. . . VARIG, Brazilian airline, plans to open its Rio de Janeiro-New York service this summer: the first of its three Super Constellations is due for delivery in May. . . . Airwork, Ltd., British independent which is starting a scheduled trans-Atlantic all-cargo service in March, has appointed the Blue Star Line and Furness Withy & Co. as general agents in several U.S. localities. . . Foshing Airlines of Formosa is taking over part of the Formosan domestic operations of Civil Air Transport.

BOAC has requested British gov-

ernment permission to buy 19 Douglas DC-7C's for about \$42 million to add to its fleet of 17 Stratocruisers, 16 Constellations, and 22 Argonauts. . . . Compania Mexicana de Aviacion is seeking financing to buy three DC-7C's; the new planes would be used to inaugurate Mexican flag service to New York and pos-

sibly also to Europe.

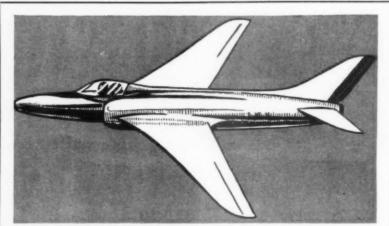
Manufacturing Briefs

Some 1000 of Avro Aircraft Ltd.'s airframe production workers, mostly unskilled and semi-skilled, were scheduled to be laid off at the end of the month as a result of a Canadian government order to cut back the rate of CF-100 Mark IV delivery and stretch out production. . . . Canada's first production helicopter, the Doman-Fleet LZ-5, is expected to make its initial flight at Fort Erie, Ont., early in March. . . . Kaman Aircraft Corp. has set up a wholly owned subsidiary, Kaman Aircraft of Canada Ltd., at St. Catherine's, Ont.

France's Fouga company expects that 25 of its 170R Magister jet trainers will be flying by the end of 1955; seven have been built to date while the 1956 schedule calls for the production of 71. . . . Some 70 de Havilland fourengine transports have been sold to date . . . The first production Avro Vulcan jet bomber is due to fly any day now. . . . Folland expects that the Gnat with the developed Bristol Orpheus plus "Wee Heat" afterburner will attain Mach 1-2 in level flight at 40,000 feet. . . Hawker has completed about 200 Hunters to date but only 30 to 40 have reached RAF squadrons and these are not yet operational. . . . A Gloster Jave-lin fitted with a probe has been doing trials with the English Electric Canberra high-altitude tanker with drogue equipment fitted by Flight Refuelling

Military Briefs

Royal Rhodesia Air Force has taken the delivery of the first four of its 30 Percival Provost trainers and has retired its last Tiger Moth; its re-equipment with Provosts and Vampires should be completed by June. . . .



NATO'S LIGHTWEIGHT FIGHTER?

Brequet TAON (the name is an anagram of NATO) is reported to have won the NATO lightweight fighter competition. Two prototypes have been ordered. One of the French nationalized aircraft companies will probably handle production.

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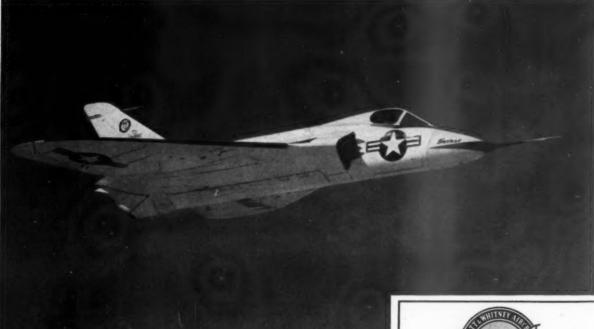
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NORTH AMERICAN'S F-100 (top) and DOUGLAS' F4D share honors in the award of the Collier Trophy in 1954. Both are supersonic. The USAF F-100 Super Sabre holds the official world's speed record of 755.149 m.p.h., set in 1953, only a few weeks after the Navy F4D Skyray had hit 752.943 m.p.h to bring the speed record back to the United States.



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Your home away from home

I VE SPENT enough of my life in hotel rooms here and abroad to be an authority.

The other day I figured up that I have stayed in at least 11 different hotels in Los Angeles at one time or another, at least 11 in London, and something on the order of 10 each in Chicago, Copenhagen, and Paris. I've rested my bones in palatial suites and I've stayed in hotels with outside toilets.

So it's on the basis of a fair amount of shuffling in and out of hotels of all kinds that I've compiled four major gripes. Many people seem to judge a hotel by whether the beds are comfortable, but oddly enough I seem to sleep okay on any kind of a bed and scarcely remember when I've had good ones and bad ones. But here are my gripes:

1. Tops on the list is insufficient light. It's amazing, considering that we are in an age of electricity, how poorly lighted hotel rooms are. A 40-watt bulb has a psychologically depressing affect on me. Electricity costs so little nowadays that I'm surprised how cheap many hotels are to use 40 watts when 60 will be better, or 60 when 100 or 150 watts per bulb are needed. And how very, very few hotels provide adequate light for shaving! I'm convinced that the age of electricity passed right by hotelkeepers without their knowing it. (But it didn't pass unnoticed by the smarter motels!)

2. Baggage space. Most hotels apparently go on the theory that the customer enters the hotel without any luggage at all or, if he does have some, he promptly unpacks everything into bureaus. Much of my traveling calls for one and two-night stands, so I dislike unpacking. Anyway most bureau drawers are dusty or dirty or both. So I want luggage racks-those simple, inexpensive things that fold up when not in use. It's extraordinary how few hotels have even a single rack. And the hotel that has more than one is indeed a rarity. The paucity of space to put luggage and small bags and the like is a discredit to the hotel industry which is supposed to be geared to taking care of travelers. European hotels, as a rule, are much better equipped. No hotel room should have fewer than two racks. Large double rooms should have at least three.

3. Now let's examine the average bathroom in the American hotel. It's a

disgrace. Not only is it usually poorly lighted, but often there is no space whatever on which to lay out a shaving kit, hairbrush, and the like, Sure, there are those medicine cabinet things back of the mirror, but 99% of these are dirty and rusted, and on a one-night stand who wants to unpack a shaving kit? The average European hotel not only has a spacious bathroom, but invariably has a stand-covered with clean linen-on which to lay out all of the customary toilet accessories. Most European hotels have a chair or a stool, too. But the average American hotel bathroom seems to be built for a twohour occupancy by patrons who pay in advance because they have no luggage. They certainly belie that oft-used advertising phrase, "Your home away from home." Pure baloney.



4. Music and TV. I buy every newspaper published in every city, but I still like to get my radio news morning and night. I also like music. I don't care much whether the news and music are piped in through pre-selected channels or whether there is a full-scale radio, but I'd rather have nothing at all than to have to put up with pipedin systems in poor condition. Lately in the Hollywood Roosevelt in Hollywood, and within the past year at the Lexington in New York, I've suffered through goshawful distortions trying to hear some news just because the engineer hadn't tuned in the stations properly or because the speaker was malfunctioning, or for some other reason. If the hotelkeepers missed the age of electricity, they're certainly missing the electronics age. And incidentally, how I hate those coin-operated radio and TV sets, the cheapest sort of adornment for a room for which you've already forked out plenty of dough.

An insult to the intelligence. I'm surprised some hotelkeepers haven't installed coin-operated juke boxes.

In short, if the American hotel wants to offer "a home away from home," why in the world doesn't it do something about it. The new motel network offers a lot more than parking convenience and the average motel room has better lighting, more space, and more home-like accessories than the average hotel room. Wonder if hotel managers ever take a look at their own rooms?

Now that I've gotten those gripes off my chest, let me pass out a few bouquets. I've stayed in some top-notch inns lately.

I put the Olympic in Seattle in my prime list of well-built, well-maintained, and well-operated hotels. There's lots of good light in both bedroom and bathroom. No radio, but the beds are unusually comfortable. The establishment has an atmosphere of stability and experience. It's a pleasure to return there. Last November I left a dirty shirt behind and it was sent to me posthaste before I had a chance to write and ask about it.

Another fine hotel where I stayed just a few weeks ago is the Fairmont on top of the hill at California and Mason in San Francisco. If you haven't been inside for several years, you've got a pleasant surprise coming. A fortune was spent in redecorating and revamping, all to good purpose. The Fairmont has one of the most graceful and charming lobbies in the world. The redecorated rooms have lots of light. There are two luggage racks! There is a TV set (no coin box). It is a very fine hotel, well managed and operated. It can truly say that it's "a home away from home." And incidentally, the telephone service was exceptionally good.

Having stayed at the old but substantial Muehlebach Hotel in Kansas City many times, I was pleasantly surprised on my last stay there when I got a room in the new section completed not long ago. My congratulations to the management. The studio rooms are excellent. So also are the bathrooms which have the wash basins set into vinylite cabinets with plenty of room to spread out the shaving and other stuff.

I'll have more to say about good and bad hotels and eating places next issue.

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not one ...

not two...

not three...but...

tour

Yes, four Lear-Romec pumps help the Sikorsky XH-39 set world's helicopter records for speed (156.005 mph) and altitude (24,500 ft).



HYDRO-MECHANICAL CLUTCH PUMP



LEAR-ROMEC



SUBMERGED FUEL BOOSTER PUMP

LEAR-ROMEC DIVISION Elyria, Ohio

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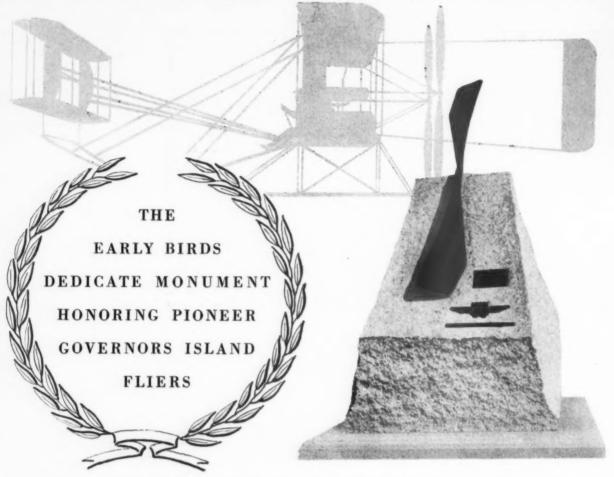
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PIHIS HANDSOME MONUMENT was unveiled last December 17th on Governors Island, New York, in honor of the American pioneer aviators who contributed so much to the development of aviation by their early flights to and from this historic Island. The monument was unveiled by helicopter—another aviation "first."

The monument was erected under the auspices of The Early Birds, an organization of those who flew solo before December 17, 1916...38 years, to the day, before the unveiling of the monument.

The propeller on the monument was cast in bronze, directly from one of the Wright Brothers' wooden propellers, two of which propelled the first U. S. Army military plane, a 1909 Wright. (This famous plane is shown in phantom illustration, above.)

The monument weighs more than 15 tons, and

is hewn out of Deer Creek granite from Maine, specially quarried for this project. It faces the largest structure on Governors Island, Building 100; and will command the attention of thousands of visitors every year.

PHILLIPS PETROLEUM COMPANY takes this opportunity to join in paying tribute to the memory of those distinguished Governors Island pioneers, living and dead, who contributed so significantly to the advancement of American aviation. And Phillips is also honored to pay tribute to The Early Birds, who have so signally commemorated the accomplishments of their flying colleagues.

AVIATION DIVISION
PHILLIPS PETROLEUM COMPANY
BARTLESVILLE, OKLAHOMA



AVIATION PRODUCTS

Circle No. 27 on Reader Service Card.